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Surgeries and Cardiovascular System

Autoamputated Appendix

Laparoscopy at Sebokeng

Highlights

Paraganglioma of Mesentery

Extracorporeal Cardiac Shock

Discovering Thoughts, Inventing Future

VOLUME 14 ISSUE 4 VERSION 1.0

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Laparoscopy at Sebokeng Hospital with Emphasis on Trauma

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Abstract- Advances in minimal access surgery has revolutionized the practice of surgery over the past two decades. In some areas, laparoscopy has become the standard of care as in cholecystectomy. Laparoscopy in trauma however has been trailing behind, supposedly because of the fear of missing injuries in unpredictable trauma setting. There are reports in the literature about the benefit of laparoscopy in trauma, but we do not have local data in South Africa. We therefore endeavour to assess the place of laparoscopy in trauma by performing this audit of our laparoscopy practice at Sebokeng Hospital, South Africa.

Objective: Review of the practice of Laparoscopy at Sebokeng Hospital with special emphasis on trauma to identify the indications of laparoscopy in the management of selected injuries.

Methods: Retrospective review of data from all laparoscopic procedures performed between November 2011 and October 2012 at Sebokeng Hospital. Parameters evaluated included demography, mechanism of injury, procedure and intra-operative findings.

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Laparoscopy at Sebokeng Hospital with Emphasis on Trauma

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Methods: Retrospective review of data from all laparoscopic procedures performed between November 2011 and October 2012 at Sebokeng Hospital. Parameters evaluated included demography, mechanism of injury, procedure and intra-operative findings.

Result: A total of 390 laparoscopic procedures were performed. Majority were emergency 77.9% (304/390) topped by appendicectomy 54.9% (167/304) whilst trauma represented 13.8% (42/304) of all emergencies.

Cholecystectomy was the most common elective procedure 74.4% (64/86). Of the trauma cases, 40 were available for analysis; the patients were predominantly male (36/40) and stable penetrating trauma was the most common indication (34/40) for surgery. Laparoscopy was successfully completed in 65% (26/40) of the patients. The remaining cases benefited from conversion 17.5% (7/40), laparoscopy assisted mini-laparotomy 15% (6/40) and laparoscopy guided referral to tertiary Hospital 2.5% (1/40).

Conclusion: Laparoscopy is applicable in trauma in carefully selected cases obviating the need for unnecessary laparotomy with its related early and long term complications.

I. Introduction

Technology has rapidly revolutionized the practice of medicine in the past two decades. Minimal access surgery is evolving gradually and in some procedures, it has become the standard of care as in laparoscopic cholecystectomy[1,2,3].

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Laparoscopic appendicectomy, the most common emergency general surgical operation has made significant progress over the past few years [4]. But trauma is lagging behind supposedly due to the fear of missing injuries in a somewhat unpredictable trauma scenario [5,12]. While this concern is genuine in a complex case, it should not defer the surgeon from attempting laparoscopy because in selected patients, laparoscopy can reduce the rate of negative and positive but non-therapeutic laparotomies in trauma [6,7]. There is also an added potential benefit of decreasing the incidence of adhesive bowel obstruction and formation of incisional hernia; the most common late complications of laparotomy. Acquisition of skills coupled with sound clinical judgment are paramount for laparoscopy in trauma to gain ground in common surgical practice [5]. The feared complication of missed bowel injury may render the laparoscopic approach counter-productive considering its associated high morbidity and even mortality. Therefore a systematic standardized approach is needed during laparoscopy to lessen the risk of missing bowel injury and a low threshold for conversion should be encouraged in the setting where laparoscopic visualization is challenging or sub-optimal [12]. We do not have published data about our local experience of the use of laparoscopy in trauma. This study will endeavour to give an overview of our laparoscopic practice at Sebokeng hospital with emphasis on trauma. Sebokeng hospital is a regional hospital in South Africa with registrar training program. We believe it is crucial to familiarize the prospective surgeons with laparoscopic exposure in all fields of surgery to keep up with the advancing technology. This entails adjustment in the mind-set and procurement of the necessary skills to adapt to the changes of practice and to overcome the learning curve.

II. Objective

Review of the practice of Laparoscopy at Sebokeng Hospital with special emphasis on trauma to identify the indications of laparoscopy in the management of selected injuries.

III. Methods

Audit of all abdominal surgical operations performed between November 2011 and October 2012

at Sebokeng Hospital, a regional hospital with a Registrar training program. A subgroup of trauma patients treated with laparoscopy was analysed. Parameters included are demography, mechanism of injury, procedure (laparoscopic or laparoscopy- assisted procedures, converted cases) and intra-operative findings. Unstable penetrating trauma were excluded, preference given to emergency laparotomy. Ethic approval was obtained from the Human Ethic Committee of the University of the Witwatersrand.

IV. Statistics

This is a descriptive study using mean, proportion by ratio or percentage.

V. Results

A total of 851 abdominal surgeries were performed (436 emergencies and 415 electives) both for trauma and non-trauma. 54.1% (461/851) of procedures were laparotomies and 45.8% (390/851) of the procedures were performed laparoscopically. Of the laparoscopic cases 77.9% (304/390) were emergencies and 22.0% (86/390) were elective. The elective group was mainly cholecystectomy 74.4% (64/86) while hernias (inguinal, incisional) represented the remaining 25.5% (22/86). Appendicectomy topped the list in the emergency group: 54.9% (167/304). Exploratory laparoscopy contributed 26.3% (80/304) for various pathologies (bowel obstruction, pelvic inflammatory disease, abdominal tuberculosis, pancreatitis) and 13.8% (42/304) were due to trauma. Repair of perforated peptic ulcer occurred in 4.9% (15/304). Of note, appendicectomy and cholecystecto my covered 59.2% (231/390) of all laparoscopies.

Of the 42 trauma cases, 2 were excluded due to missing data and 40 cases were available for analysis. The mean age was 31.6 years (14-62) and there were 36 males and 4 females with male to female ratio of 9:1. Indications for laparoscopy were divided as follow:

a) Stable (most common): 37 cases

i. *Penetrating: 34 cases divided as*

1. Thoracoabdominal stab (suspected diaphragmatic injury): 7 cases
2. Intra-abdominal organ injury suspected without clear clinical evidence of acute abdomen: 27 cases

- Stab: 25: - Disembowelment: 8 cases (6 omentum, 2 small bowel)
- No disembowelment: 16 (penetrating injury: suspected perforating injury)
- Knife impacted in the abdomen: 1
- Gunshot: 2. (no disembowlement)

Blunt: 3 cases.

- 2 delayed (acute abdomen): 1. Small bowel injury
2. Pancreatic injury
- 1 acute: Diaphragmatic injury

b) Unstable (uncommon): 3 cases.

i. *Penetrating: None (exclusion criteria)*
ii. *Blunt: 3 acute cases (polytrauma): 03 (non-therapeutic exploration).*

VI. Findings

1. Thoracoabdominal: 7 penetrating stab wounds (3 negative and 4 diaphragmatic injury repaired), one blunt (repair diaphragmatic injury).
2. Abdominal: 25 Stabs (8 non-therapeutic, 6 negative explorations, 6 converted, 5 laparoscopy assisted).
3. Abdominal: Two gunshots of which one non-therapeutic (isolated liver injury) and the second case converted (ascending and transverse colon injury).
4. Abdominal: 6 blunt cases: One converted (small bowel injury with peritonitis), one pancreatitis (secondary to pancreatic injury: delay case, patient transferred to tertiary hospital for further management), one diaphragmatic repair and 3 non-therapeutic (minimal blood due to grade 1 liver injury) of which two were transferred to orthopaedic surgery for further management of multiple long bone fracture and one died due to the severity of injury (severe head injury, pelvic fracture, multiple long bones).

65% (26/40) of the procedures were completed laparoscopically. 15% (6/40) were laparoscopy-assisted, 17.5% (7/40) were converted and in 2.5% (1/40) laparoscopy had guided decision for referral.

VII. Discussion

The main intention at this stage was not to accomplish a laparoscopic repair of intra-abdominal pathologies but to avoid unnecessary laparotomy (negative exploration or positive but non-therapeutic finding) or to guide a laparoscopy- assisted minimally invasive open repair. The exception was in the cases of an isolated diaphragmatic injury which were repaired laparoscopically.

a) Stab

Thoracoabdominal: Unless there are obvious herniation, thoracoscopy or laparoscopy is the preferred procedure to perform to rule out diaphragmatic injuries. None of the investigations (Ct scan, ultrasound, contrast study) are sensitive enough to pick up diaphragmatic injury nor specific enough to rule it out [8,9]. In our practise, missed diaphragmatic hernias present later with complications thereof, often with dire consequences. Four of the seven patients with thoracoabdominal stab had diaphragmatic injury that were repaired laparoscopi cally.

Twenty one laparotomies were prevented because of exploratory laparoscopy. In these patients with penetrating stab wounds to the abdomen; the

clinical pictures were not clear cut early on; usually there is tenderness around the stab with no obvious peritonitis. The main aim of ultrasound and Ct-scan in trauma is to diagnose the presence of intraperitoneal fluid; their roles become even less defined when we consider hollow viscus perforation for which the sensitive and specific is not adequate enough to diagnose or exclude a minor bowel injury [9,10].

Practising selective conservatism may be dangerous for a nick in the bowel may manifest as peritonitis after 48 to 72 hours (mucous plug preventing early spillage of bowel content). Some surgeons advocate wound exploration under local anaesthesia [11]. If the wound is penetrating then laparotomy is performed (fig.1). With this approach, all our patients would have had unnecessary laparotomy. One patient had a self-inflicted stab in the left upper quadrant with impacted knife; the laparoscopic exploration revealed through and through left liver lobe laceration with no other injury (fig.2). Under vision the knife was removed and there was no evidence of significant bleeding. A drain was left in situ. If a laparotomy was performed instead, it would have been positive and non-therapeutic.

Six cases were converted, when laparoscopic exploration was positive and the magnitude of injury precluded a safe laparoscopic repair, then conversion was preferable to minimize the chance of missing an injury or performing inadequate laparoscopy repair because advanced laparoscopy skills is required to perform intracorporeal suturing. An example of such case was a patient with right flank stab, the clinical picture was not remarkable and the reason for exploration was to rule out a possible retroperitoneal injury (colon, ureter). When the laparoscopic exploration was almost completed as a nontherapeutic procedure; there was a sudden massive bleed. The conversion revealed a transected left common iliac vein that was ligated. Likewise, 6 patients had an isolated bowel injury on laparoscopic exploration necessitating a mini-laparotomy to exteriorise the injured bowel and to perform a safe open repair. With advanced skill in laparoscopy all these cases could possibly have benefited from laparoscopic repair.

b) Gunshot

Most gunshots will still qualify for exploratory laparotomy but in certain cases such as stable patients without evidence of peritonitis where intra-abdominal injury is unlikely, laparoscopy can help decide whether there is an injury which does not require further management. We had one such case of a gunshot wound to the right upper quadrant who was shot from behind with the bullet palpable under the skin anteriorly. Exploratory laparoscopy showed a liver injury through segment 8 with minimal oozing and no evidence of bowel injury (fig.3). A drain was inserted and the patient was discharged on day 2 uneventfully (positive finding but non-therapeutic). In the second case, there were two gunshot wounds (right upper quadrant and right flank) and on laparoscopic exploration, a transverse colon injury was detected and the laparoscopic approach was abandoned. At laparotomy an additional injury was found in the ascending colon; a right hemicolectomy was performed.

c) Blunt injury (acute presentation)

In exceptional cases of polytrauma (blunt abdominal trauma, fracture pelvis and long bone, severe head injury) (fig.4, 5, 6) with hemodynamic instability, laparoscopy was quickly done to ascertain whether the abdomen was the cause of instability (in which case immediate conversion would have been done) obviating the need for laparotomy and redirecting the focus elsewhere (pelvic or long bone fractures and thoracic injuries).These are resuscitation cases and in setting, there is no time to wait for a radiologist to perform a sonar (FAST) or abdominal Ct-scan, the patients were rushed to operating room with the intention to perform a quick diagnostic laparoscopy to rule out the abdomen as the cause of instability. In all three cases, laparotomy was averted because laparoscopy revealed only very minimal blood in the peritoneal cavity (non-therapeutic). Two patients survived and were transferred to Orthopaedic department after initial ICU care. The third one demised due to severity of head injury and associated pelvic and multiple long bones fracture. Of the two survivors, one of the patients had a diagnostic laparoscopy combined with the insertion of an external fixator (C CLAMP) to stabilise the pelvic bone.

d) Blunt (delayed presentation)

We had two cases of acute abdomen following assaults. In the first case, we discovered bowel content but the source could not be assessed properly because of the inflammatory response and conversion was necessitated. The second patient showed evidence of pancreatitis (saponification) with no other obvious injury. The procedure was terminated and Ct-scan showed double fracture of the pancreas (fig.7). The patient was referred to hepatobiliary unit where laparotomy was performed for definitive management. In this case the laparoscopy obviated the need for two laparotomies. It is important to understand that exploratory laparoscopy can miss retroperitoneal injury, so the mechanism of injury combined with clinical picture should not be overlooked.

From this study, 65% of unnecessary laparotomy were avoided, 15% of patients benefited from mini-laparotomy because of laparoscopic guidance, 17.5% of patients had appropriate decisions made during laparoscopy to proceed to immediate laparotomy (conversion) and in 2.5% the decision was made to abandon the procedure and to prompt special

investigation (CT-Scan) which directed referral to the hepatobiliary unit.

This preliminary study shows that in carefully selected cases, there is a room for laparoscopic exploration; it is not expected to handle complex trauma cases but to identify scenarios where a less aggressive approach can be applied. We did not have any missed injury in this study; not because the surgeons involved had the best laparoscopic technique; but because appropriate decision making was performed i.e. to continue laparoscopically, to change the approach to laparoscopy-assisted mini-laparotomy or to convert to open procedure altogether. By so doing, we understood the best indication of each approach in a given situation. There are cases which were immediately selected for laparotomy that are not part of this study.

We did not perform the breakdown of the 461 cases of laparotomy which were mainly due to trauma but suffice to say that in term of proportion, the 42 cases of trauma laparoscopy represented an estimated 10 - 15 % of all trauma laparotomies. This emphasizes the low threshold we had to perform laparotomy rather than laparoscopy at this early phase of laparoscopy in trauma.

e) Laparoscopy skill

The skill of the laparoscopic surgeon is paramount to perform a safe laparoscopic procedure. The ability to perform intracorporeal knot tying is essential for an advanced laparoscopy. In our study, some of the converted cases (either to full laparotomy or minilaparotomy) were simple bowel injuries that could have benefited from laparoscopic repair if the surgeon could perform intracorporeal knots. We believe that as our proficiency in laparoscopy improves, more cases will qualify for this approach in future. This will be achievable if the trainees (registrars) are exposed early and consistently to laparoscopy both for emergency and elective cases during their training.

f) Instability

Unstable penetrating trauma patients were excluded according to the exclusion criteria and patients in this category had exploratory laparotomies performed. All our laparoscopy for penetrating stabs were stable. We did not expect to perform laparoscopy on a critically ill patient. Neverthless, in a small group (3 cases) of unstable blunt trauma, we performed laparoscopic exploration with the intention to rule out the abdominal cavity as the cause of instability rather than to perform any laparoscopic repair. This was proven to be beneficial in our setting where access to ultrasound and Ct scans are limited.

VIII. Conclusion

Laparoscopy is applicable in various fields of general surgery. Certainly, there is a role for laparoscopy in carefully selected trauma cases. Laparoscopy has contributed to the prevention of unnecessary laparotomy in two-thirds of our cases and in the remaining cases it guided the management towards a minimally invasive surgery (mini-laparotomy) and prompted special investigation that assisted in the decision making. Only 17.5% required conversion. Indeed there is a role for laparoscopy in trauma mainly at this early stage to reduce preventable laparotomy rather than to embark in the repair of complex injuries.

IX. Recommendation

We believe this pilot study will provide the general and trauma surgeon with some evidence to consider laparoscopy in very carefully selected trauma settings rather than to have a nihilistic approach.

Converted: 7 cases

Mechanism	Injury	Action
Stab thoracoabdominal	Diaphragm+stomach through and through	Repair diaphragm+ stomach
Stab thoraco abdominal	Spleen grade 4 injury	Splenectomy
Stab abdominal	Colon+small bowel	Repaired
Stab abdomen	Small bowel	Repaired
Gunshot abdomen	Ascending,transverse colon and small bowel	Right hemicolectomy+ repair bowel
Stab abdomen	Common iliac vein injury	Ligated
Delayed stab	Small bowel	Repaired

Laparoscopy completed: 26 cases

Number	Mechanism	Injury	Action
4	Stab thoracoabdominal	Diaphragm	Repaired
1	Stab abdomen	Small bowel	Repair
3	Blunt abdomen	Liver	Non-therapeutic
2	Stab abdomen	Omentum bleeding	Hemostasis
6	Stab abdomen	Negative	Nil
1	Gunshot abdomen	Liver through and through	Non-therapeutic
1	Blunt abdomen	Diaphragm	Repaired
8	Stab abdomen	Omentum (6), liver(1), spleen (1)	Non-therapeutic

Laparoscopy assisted repair: 6 cases

Number	Mechanism	Injury	Action
4	Stab abdomen	Small bowel	Repair through mini laparotomy
2	Stab abdomen	Sigmoid colon	Repair through mini laparotomy

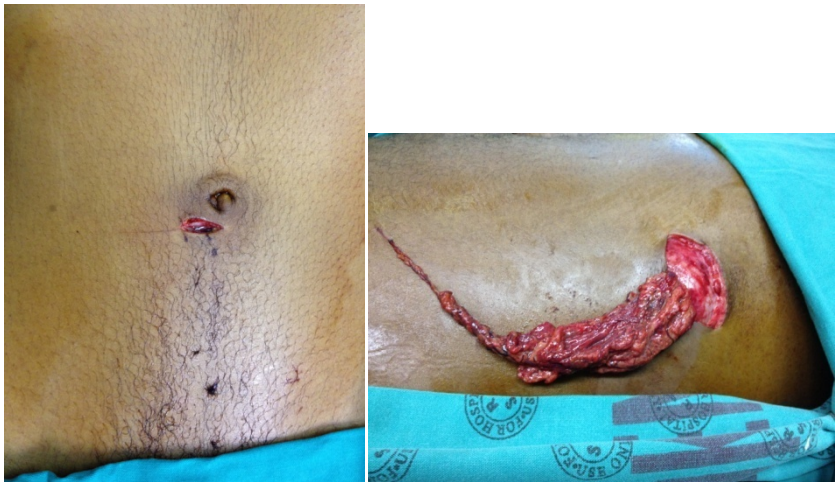

Figure 1 : Penetrating abdominal stab.1a.No disembowelment (negative laparoscopy);1b. Omentum sticking out (laparoscopy guided hemostasis)

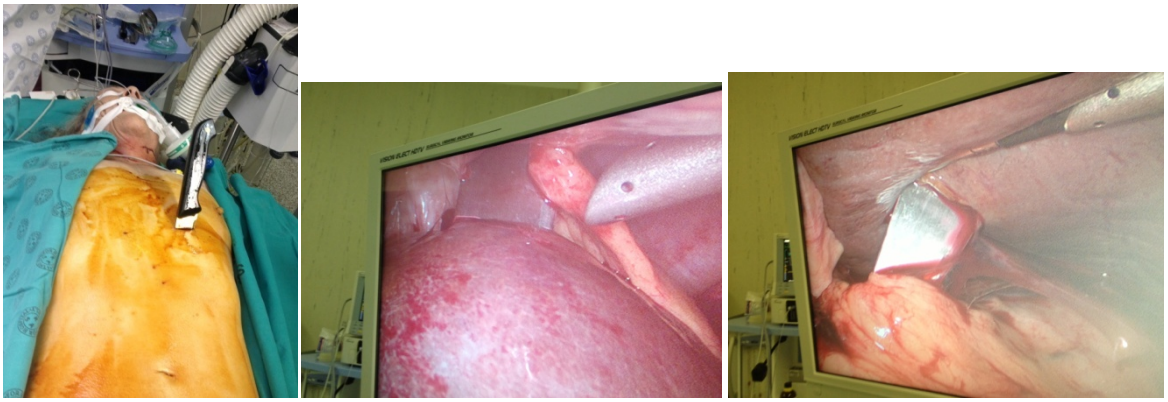

Figure 2 : Impacted knife with non-therapeutic laparoscopy. 2a.Left upper quadrant stab, 2b.Anterior liver(left lobe), 2c. Posterior liver (left lobe)

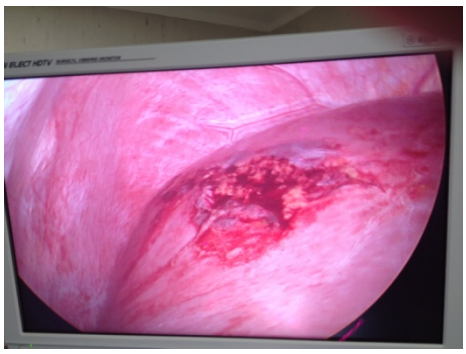

Figure 3 : Gunshot liver right lobe (segment 8). Non therapeutic laparoscopy

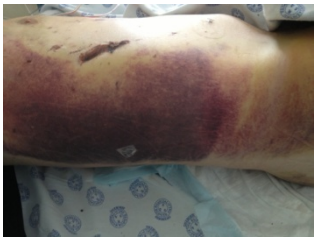

Figure 4 : Blunt trauma. Massive contusion right flank.Non-therapeutic laparoscopy prevented unnecessary laparotomy

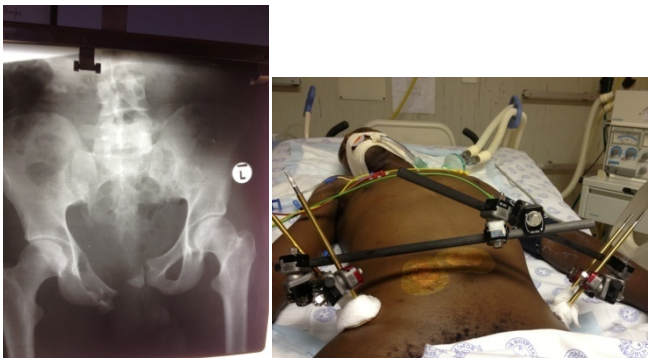

Figure 5 : a: Open book fracture; *b:* External fixator (C clamp) after a non-therapeutic laparoscopy

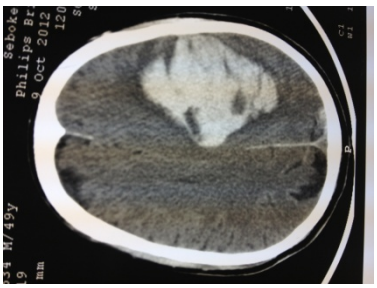

Figure 6 : Massive intracerebral bleed contributed to the severity of polytrauma patient with non-therapeutic laparoscopy

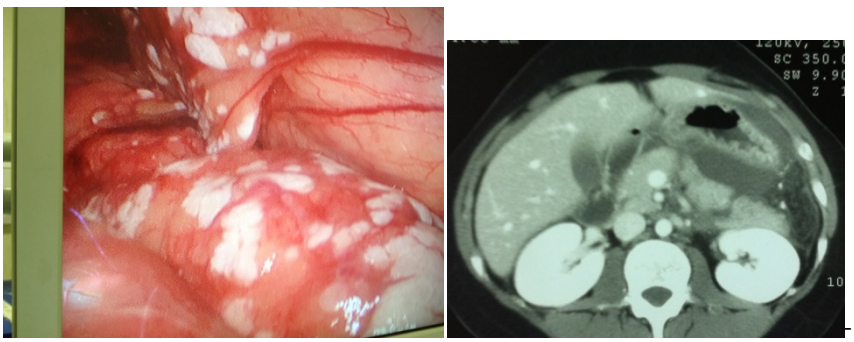

Figure 7 : a: Exploratory laparoscopy: Saponification prompted a ct-scan abdomen; *b:* Ct-scan: Double fracture of pancreas

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Extracorporeal Cardiac Shock Wave Therapy (CSWT) for Treatment of Coronary Artery Disease in China

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Keywords: extracorporeal cardiac shock wave therapy, myocardial infarction, ventricular remodeling, angio genesis.

GJMR-I Classification: NLMC Code: WG 205, WG 300

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Abstract- **Coronary artery disease (CAD) is a leading cause of mortality worldwide. Common therapies in the treatment of CAD are invasive, insufficient and pose additional risks in patients with advanced refractory CAD. Cardiac shock wave therapy (CSWT) is a safe and effective non-invasive intervention in the management of patients with refractory CAD. In this article, we briefly outline our work in animals and humans, and discuss the advantages and perspectives of CSWT in China.**

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I. Introduction

Current therapies in the treatment of CAD include drug interventions, percutaneous coronary intervention (PCI), coronary artery bypass graft (CABG) and transmyocardial laser revascularization (TMR). However, these approaches are invasive and often inadequate in the treatment of advanced CAD and are associated with serious cardiovascular risks and complications. Thus, there is need for a safe and effective, noninvasive approach toward the treatment of CAD. Cardiac shock wave therapy (CSWT) is a novel, noninvasive intervention that can ameliorate myocardial ischemia and improve cardiac function. Evidence indicates that CSWT may reduce the ischemic burden and provide angina relief by promoting angiogenesis and revascularization in ischemic myocardium[1-7]. Earlier in vivo animal studies and human clinical studies demonstrated that low-energy pulse waves produced by CSWT induced a "cavitation effect", exerting a mechanical shear force and on myocardial and vascular endothelial cells. Shock wave treatment promoted angiogenesis in ischemic porcine myocardium by up-regulating vascular endothelial growth factor (VEGF) mRNA and its receptor fms-like tyrosine -1 (flt-1). Furthermore, improved regional myocardial blood flow and capillary density were also observed [1,2]. Subsequent clinical studies have shown that CSWT can significantly improve cardiac function in patients with severe CAD and refractory angina who are not candidates for PCI or CABG [3 -12]. Based on the promising results from animal and clinical studies. We initiated a series study of CSWT in China on porcine model, cells and CAD patients to prove up the angiogenetic mechanism and effect of CSWT in vivo and vitro experiments, also to evaluate the feasibility and efficiency of CSWT for treatment of CAD and to establish the inclusion and exclusion criteria and summarize the methodological outlines of CSWT in China. (Picture 1)

Picture1 : CSWT for clinical and porcine trials

II. In Vitro Study

Cai et al. reported that[13,14] human umbilical vein endothelial cells (HUVECs) lines were performed by different level of shock wave energy (0, 0.03, 0.09, 0.18, 0.24mj/mm^2) in vitro. HUVECs proliferation and the changes in mRNA and protein of VEGF、interleukin-8(IL-8)、intercellular adhesion mole cule-1 (ICAM-1) were observed before and 24 hours after CSWT. Compared with the non-treated control, the results from real time PCR revealed the 0.09mJ/mm^2

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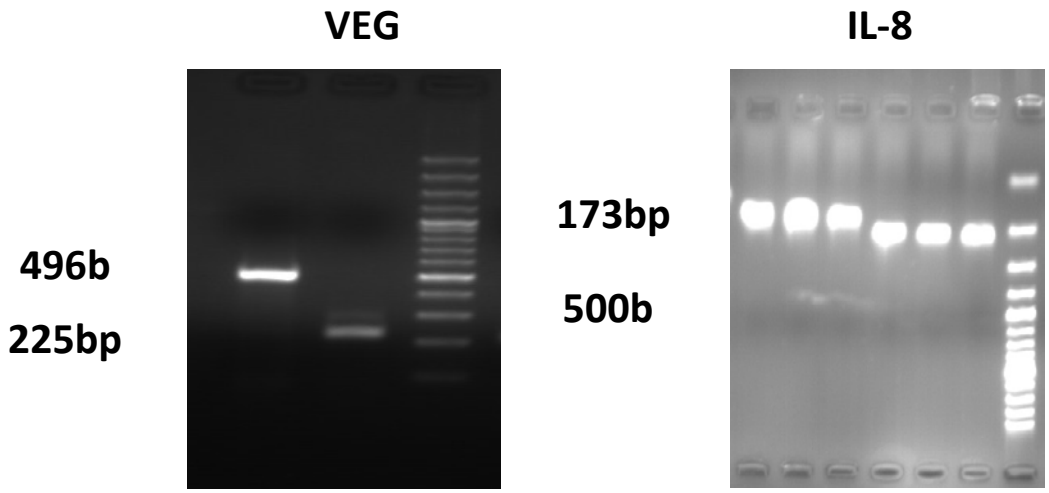
shock energy significantly promoted the HUVECs proliferation (P<0.05), and also markedly increased the expression of VEGF, IL-8, ICAM-1(P<0.001); The expression of ICAM-1 0.03 mJ/mm^2 group were increased significantly (P<0.01) while the expression of VEGF, IL-8 showed no significant changes(P>0.05); 0.18mJ/mm^2 treatment markedly increased the expression of VEGF (P<0.001) while the expression of ICAM-1, IL-8 showed no significant changes(P>0.05); 0.24mJ/mm^2 had no significant effect on the expression of VEGF, IL-8, ICAM-1(P>0.05). Western blot analysis and Flow Cytometry showed that the expression of VEGF, IL-8, ICAM-1 in 0.09mJ/mm^2 group were markedly increased (P<0.05); The expression of VEGF in 0.03, 0.18, 0.24mJ/mm^2 group was obviously higher (P<0.05) while the expression of ICAM-1, IL-8 had no changes (P>0.05). In addition, a total of 26 patients with history 1～16 years of old myocardial infarction, stable and unstable angina pectoris from August 2008 to December 2010 were enrolled, which were applied by standard CSWT procedure. Before and at 30 days after CSWT treatment, mononuclear cells were obtained from peripheral blood and endothelial Progenitor cells (EPCs) were cultured in EGM-2-MV medium. Morphology and the number of colonies of EPCs were observed and the level of VEGF, IL-8, stromal cell-derived factor-1(SDF-1) and matrix metalloproteinase-9 (MMP-9) was determined. The cultured EPCs and EPC-CFU number in vitro were significantly increased after CSWT [EPCs (18.85±4.30) cell /high power field vs (30.12±6.77) cell/high power field; (5.08±1.79) cell/high power field vs (12.27±2.75) cell/high power field, P<0.001]; Circulating EPCs were significantly increased [(0.015±0.003)% vs (0.021±0.005)%, P<0.001]; VEGF, IL-8 level were significantly increased[VEGF (120.26±19.85) pg/ml vs (155.19±24.67)pg/ml; IL-8 (21.81±5.94) pg/ml vs (149.70±44.11)pg/ml, P<0.01], whereas SDF-1and MMP-9 had no significant changes [SDF-1(2750.87±636.74)pg/ml vs (2700.47±415.19) pg/ml;MMP-9 (19.66±3.96)ng/ml vs (18.55±3.78)ng/ml, P>0.05], compared with pre-treatment[14]. We conclude the different shock wave energy promotes the HUVECs proliferation in different degree, the effect of 0.09 mJ/mm^2 energy is the most evident, and it also increases the expression of mRNA and protein of IL-8、ICAM-1 significantly. The 0.03～0.24 mJ/mm^2 energy also has some effects on facilitating the secretion of VEGF, IL-8 and ICAM. Furthermore, CSWT appears to promote the expression of VEGF and IL-8 protein, also stimulate the EPCs proliferation, significantly increase the number and function of EPCs, whereas not influence on the expression of SDF-1、MMP-9. (Picture 2)

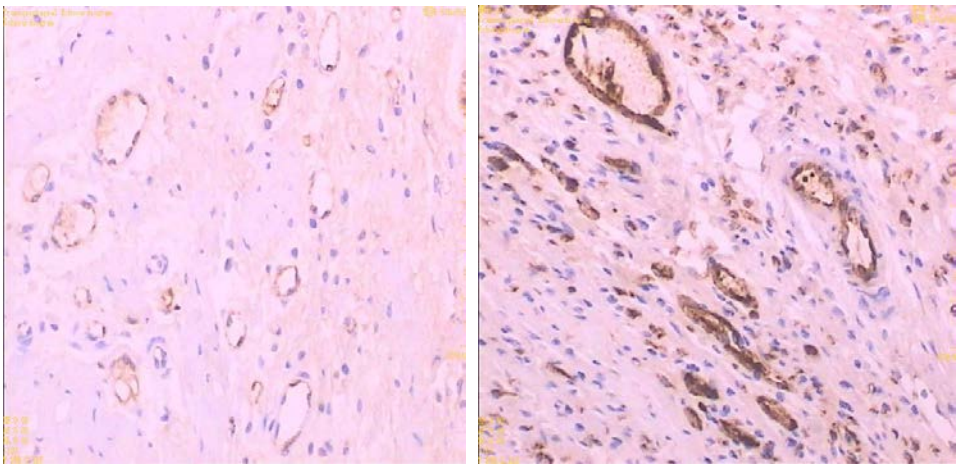


Picture 2 : VEGF and IL-8 increased significantly after CSWT

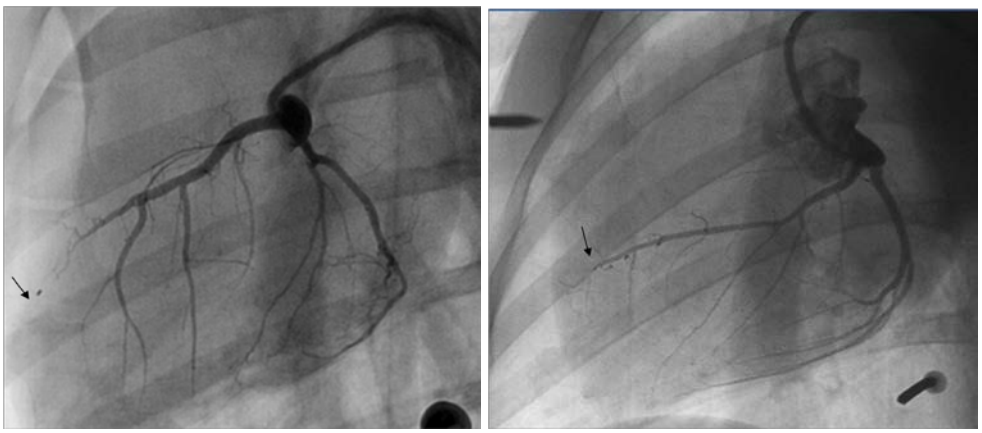
III. In Porcine Model

Tao et al. randomly divided 30 domestic swine into two groups, group A (n=13) and group B (n=17). In group A, The balloon catheter was positioned in the mid-distal segment of left anterior descending (LAD) ,and dilated with rated pressure for 60 min after ischemia precondition, then the micro-embolis was sent to the distal of target vessel; In group B, the micro-embolis was positioned in the distal segment of target vessel directly. Interventional procedure time and model success rate were collected in the two groups. 26 porcine acute myocardial infarction (AMI) models were established successfully. Model success rate of group A was 84.6%, and 88.2% in group B. No statistic significance was found in the two groups. However mean operation time of group B was significantly shorter than that of group A, 28.4±9.4min versus 105.8±27.6min, p<0.001. In addition, 26 AMI models were randomly divided into four groups: CSWT group (n=11), pseudo-CSWT group (n=5), pseudo-operation group (n=5) and blank control group (n=5). Compared with pseudo-CSWT group, the expression of VEGF mRNA was significantly increased in CSWT group with statistic difference (2.90±0.40vs2.12±0.50, P<0.01), especially in the prolonged duration CSWT. The number

of capillaries was significantly higher in CSWT group than that of pseudo-CSWT group (1856±78 vs. 837±54/mm^2, *P<0.0001*). Collateral vessel Rentrop score was significant higher in CSWT group (*2.05±0.11vs0.98±0.09, P=0.03*).Whereas, significant differences were negative between standard and extensive area compared with pseudo-CSWT group, the expression of VEGF mRNA was increased significantly in all CSWT subgroups[15,16]. Sun et al. selected 12 AMI models to detect serum endothelial nitic oxide synthase (eNOS) and expression of eNOS and basic fibroblast growth factor (bFGF) in borderline of infarction. Therapy group was performed CSWT on 1,3,5 days after AMI with low energy(0.09mJ/mm^2) at 200 shoots/spot for 12 spots. Including control group, peripheral blood was extracted at 1,3,5 days, 1,2,3,4 weeks and myocardial tissue was excided after 4 weeks. In both group, serum concentration of eNOS reduced obviously after AMI. In CSWT group, eNOS expression began to rise at 1day of CSWT, and there was a concentration peak after 3 times treatment and declined at 4 weeks. On contrast, eNOS expression in control group kept lower level during 4 weeks ($p<0.01$). In CSWT group, expression of eNOS and bFGF in borderline infarction were obviously higher than control group (eNOS 27.705±4.13 vs 16.448±3.21, bFGF 32.571±4.23 vs 17.858±4.17,$P<0.01$)[17,18,19]. We explore a new method inducing porcine acute myocardial infarction by Balloon plus micro-embolis. In porcine model, CSWT can promote the expression of eNOS and bFGF in serum Prolonged duration CSWT at early stage of AMI can improve angiogenesis of myocardium microenvironment and facilitate myocardial micro-vascular circulation. (Picture3)



Picture 3 : Capillaries density was significantly higher after CSWT compared with pseudo-CSWT group



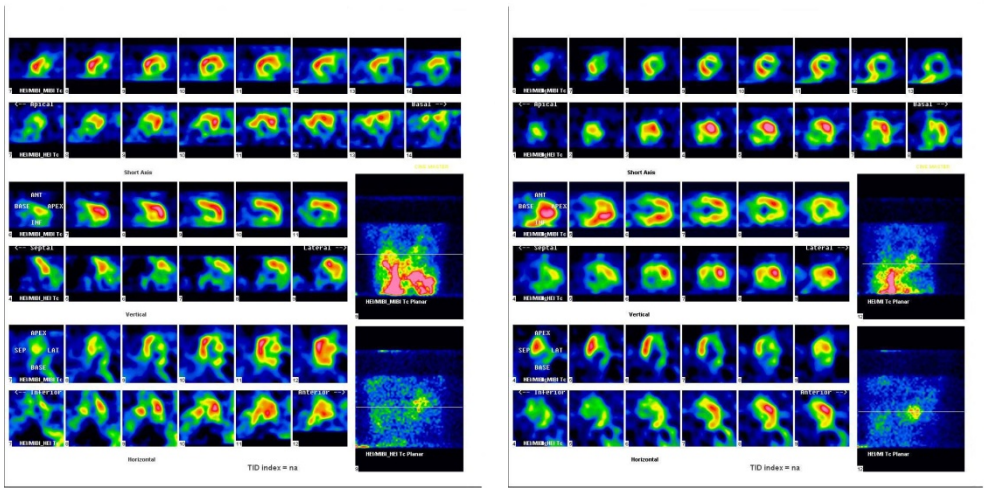
Picture 4 : Collateral vessel Rentrop score was significant higher after CSWT compared with pseudo-CSWT group

IV. CSWT for CAD Patients

Wang et al. initiated CSWT for CAD patients since 2008 in China. Male patients (n=9), aged 50-70 years with CAD diagnosis (5.11±5.46 years) and stent implantation (3.00±2.24 stents) were enrolled. CSWT was carried out each month for 3 months at three week intervals during the first week of the month (1st, 3rd and 5th day) for a total of 9 therapies per patient. Dobutamine stress echocardiography (SE) and radionuclide angiography identified myocardial ischemic segments. The effects of CSWT on myocardial perfusion and systolic function were examined. Other outcome measures included myocardial injury enzyme markers, angina scale, nitroglycerin dosage and cardiopulmonary

fitness assessments. Improved myocardial perfusion and systolic function [stress peak systolic strain rate (PSSR) -1.10 to -1.60 s^{-1}, p=0.002)] were detected in patients following CSWT. Reductions in creatine kinase (CK) (87.89±36.69 to 86.22±35.96 IU/L, p=0.046), creatine kinase MB (CK-MB) (10.89±5.73 to 10.11±5.93 IU/L, p=0.008), aspartate aminotransferase (AST) (IQR 28.00 to 27.00 IU/L, p=0.034) were found. Angina [Canadian Cardiovascular Society (CCS) scale IQR 3.0 to 2.0, p=0.035] and nitroglycerin dose reduction (IQR 3.0 to 1.0 times/wk, p=0.038) were reported. CCS grading of angina and dosage of nitrate esters were significantly reduced in 9 patients after 3 CSWT treatments and regional myocardial systolic function was improved significantly 1 month after treatment. We conclude that CSWT is a non-invasive, effective and safe intervention in the treatment of refractory CAD[20]. (Picture 5)

Picture 5 : PSSR standing for regional systolic function improved significantly after CSWT



Picture 6 : Dual isotope simultaneous acquisition SPECT certified there were improved after 9 times CSWT on myocardial perfusion and metabolism

V. A New Regimen of CSWT

Wang et al. aimed to further evaluated the clinical outcomes of a new CSWT treatment regimen. 55 patients with severe CAD were randomly divided into 3 treatment groups. The control group (n = 14) received only medical therapy. In group A (n = 20), CSWT was performed 3 times within 3 months. In group B (n = 21), patients underwent 3 CSWT sessions/week, and 9 treatment sessions were completed within 1 month. Primary outcome measurement was 6-minute walk test (6MWT). We outlined the including criteria: 1) Coronary angiography (CA) or multi-slice CT coronary angiography (CTCA) suggestive of moderate to severe coronary artery stenosis. 2) Demonstrated cardiac infarction and > 50% stenosis after radioactive and sonographic examinations. 3) Chest tightness, onset of shortness of breath, and poor exercise tolerance after receiving formal drug treatment (with or without stent or bypass graft). 4) Hospitalized more than 2 times within 1 year due to the aforementioned problems. 5) CCS angina grading higher than grade II, and NYHA functional classification of I-III. 6) More than 1 month after AMI and more than 2 weeks after PCI surgery. A history of PCI or CABG was not a contraindication for inclusion. Patients were excluded from the study if they met any of the following criteria. 1) AMI or CABG within the 4 weeks prior to the study. 2) History of heart transplantation. 3) History of metal valve replacement surgery. 4) Intracardiac thrombus. 5) left ventricular ejection fraction (LVEF) < 30% and unstable hemodynamics. 6) Arrhythmia with a rate < 40 bpm or > 120 bpm. 7) Skin ulceration or infection in the treatment area. 8) Severe obstructive lung disease. The treatment protocol of group A followed the recommended protocol developed by Tohoku University of Japan with respect to the shockwave output and the number of shots delivered to each spot and the protocol developed by the University of Essen, Germany[3,11]. In group B, a modified CSWT treatment schedule was adopted. Patients underwent 3 CSWT sessions/week, and the 9 treatment sessions were completed within 1 month. During follow-up, if the patient exhibited no observable lessening of myocardial ischemia, 1-4 treatment courses were repeated. The control group did not undergo CSWT. During the 12-month follow-up, periodic telephone inquiries, out-patient follow-up, and hospitalization were used to adjust the drugs and treat emergencies in addition to the regular 3-month, 6-month, and 12-month follow-ups. Just like our prior study[21], 25 patients had 9 CSWT treatments and two imaging methods were used, PSSR and myocardial

perfusion imaging (MPI) at the 1month follow-up. And in this study, following 12 months of observation, the CSWT treatments using two different regimens both provided satisfactory results that improved CCS grading of angina, dosage of nitrate esters, 6MWT, NYHA functional classification, Seattle Angina Questionnaire (SAQ) score, PSSR after load and resting MPI comparing to pretreatment (month 0) and to the control group. These results suggest a more frequent treatment regimen (one month) can also provide equivalent therapeutic efficacy compared to the regimen of less frequent CSWT treatment (three months). These results are exciting, but the mechanism by which a shorter term, more frequent treatment produces the same effect as a longer term, less frequent treatment is still unclear. We speculate that the mechanism might be related to the cellular and molecular mechanisms of blood vessel formation. In other words, when repeated shock wave stimulations are given within 1 month, the resulting succession of shear force effects will produce a waterfall phenomenon, and a large number of neovascular networks will form in a short period of time, ultimately promoting the establishment of collateral circulation in the ischemic area.

VI. A Randomized, Double-Blind and Placebo-Controlled Study of CSWT

Yang et al. carried out this double-blind and placebo-controlled study on CSWT. 25 patients with old myocardial infarction (OMI) were selected, who were divided into the experimental group (14 patients, the shock wave energy was given in CSWT procedure,) and the control group (11 patients, the shock wave energy was not given in the same procedure). The CSWT procedure was performed for a total of 9 therapies within 3 month. After one month of CSWT, the NYHA, CCS scale, nitroglycerin dosage, scores of myocardial perfusion and myocardial metabolic imaging by Dual-Isotope single photon emission computed tomography (SPECT) in the experimental group were reduced significantly ($P<0.05$), and SAQ scale, 6MWT and LVEF were increased significantly ($P<0.05$) compared with those before CSWT treatment. Whereas, all the parameters were not changed significantly in the controlled group before and after CSWT ($P>0.05$) [22].

VII. CSWT for the Patients with Ischemic Heart Failure

Peng et al. focused on the 50 patients with ischemic heart failure and LVEF<50%, who were randomized to either CSWT group (200 shots/spot at 0.09 mJ/mm^2 for 9 spots, 9 times within 3 month /series, n=25) or control group (exactly same procedures without shock wave energy, n=25). Dual isotope simultaneous acquisition SPECT with 99mTc-sestamibi/18 F-fluorodeoxyglucose (99m Tc-M IBI / 18 F-FDG) and Dobutamine stress echocardiography (DSE) were performed. Follow-ups were completed at 0, 3 and 6 months after therapy. At 1 month follow-up, summed perfusion score (19.40±5.2 vs.22.10±2.10 P =0.006), metabolism score (21.10±5.28 vs. 23.80±3.08 P=0.031), base PSSR (-1.09±0.71 vs. -0.62±0.36 *P* =0.007) and strain PSSR (-1.36±0.23 vs. -0.97±0.40 P <0.001) were improved in CSWT group compared to baseline and to control group. At 3 and 6months follow-up, patients in CSWT group experienced continuous improvement in symptoms: NYHA (2.36±0.50 vs. 1.46±0.21 vs. 1.67±0.52, P=0.008), CCS (2.56±0.07 vs.1.25±0.12 vs. 1.10±0.33, P=0.001), nitroglycerin dosage (3.77±0.55/week vs. 2.18±0.34/week vs. 2.51±0.43/week P=0.006), SAQ (59.01±9.43 vs. 65.0±10.09 vs.66.94±11.22, P=0.031), 6WMT (286.17 ±34.22 vs. 306.04±33.56 vs. 304.78±45.25, *P*=0.027), LVEF (%) (45.02±6.37 vs. 49.30±7.06 vs. 48.70±10.53, *P*=0.022) and LVEDD (mm) (63.10±11.36 vs. 60.13± 7.70 vs.58.10±4.01, *P*=0.033) were improved in CSWT group. Continuous increasing of VEGF (pg/ml) (127.61±31.69 vs.147.29±34.37 vs.159.56±55.36, P=0.022) and decreasing of BNP (pg/ml) (1702.25±122.75 vs. 1492.33±389.55 vs.1334.78± 227.91, P=0.001) were also observed in CSWT group. However, no significant changes were found in the control group ($P>0.05$) [23]. (Picture 6)

VIII. Non-Invasive Nature of CSWT

CSWT can effectively induce angiogenesis by up-regulating the expression of angiogenic factors and depress promoting factors of ventricular reconstruction, It still stimulate the EPCs proliferation, significantly increase the number and function of EPCs, which is certified by regional and global ventricular function improvement[13]. The different shock wave energy promotes the HUVECs proliferation in different degree, the effect of 0.09 mJ/mm^2 energy is the most evident, and it also increases the expression of mRNA and protein of IL-8、ICAM-1 significantly[14]. CSWT can promote the expression of eNOS, bFGF, SDF-1 and its receptor CXCR4[17,18]. CSWT can improve the protein expression of VEGF and it's receptor (VEGFR1/Flt-1 and VEGFR2/KDR). After inhibiting VEGF or VEGFR1/Flt-1 or VEGFR2/KDR, the effect of CSWT in endothelial cell proliferation were weakened, thus VEGF and its receptor may play an important role in the mechanism of angiogenesis of CSWT.

IX. Concluding Remarks

In China, our research team is the one who firstly imported the CSWT device from Switzerland by the end of 2008. Since then we provide scientific basis of CSWT in vitro, animal in vivo and clinical patients for the

first time in China. CSWT is a safe and effective non-invasive intervention in the management of patients with CAD, which can ameliorate symptoms, improve coronary reserve, decrease the incidence of malignant arrhythmias and subsequently improve the patients' quality of life. DSE combined with MPI, and 99mTc-MIBI /18F-FDG- DSA SPECT is a preferable method to locate the viable ischemic myocardial segments and guarantees the accuracy and effect of CSWT. A CSWT treatment regimen of one month duration provided similar therapeutic efficacy compared to a regimen with three months duration. Expanding the range of treatment (25 points therapy) could improve myocardial perfusion, myocardial metabolism and heart function than the conventional treatment protocols (9 points treatment). Indications and contraindications of CSWT in China are concluded, not only for refractory CAD, but also for those chronic pectoris which are reluctant or have no condition to undergo the invasive therapy. The candidates might include patients with ischemic heart failure, patients with permanent heart pacemaker or atrial fibrillation may also benefit from CSWT.

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Pattern of Neonatal Surgical Presentation and Outcome in Sinnar Hospital (2013-2014)

By Dr. Awad Rhmattalla Abdalla & Dr. Selma Hussien Ahmed Karsani
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Abstract- *Background:* The neonatal period is a highly vulnerable time for an infant, who is completing many of the physiologic adjustments required for extra- uterine existence. If the neonate suffered a problem which needs surgery this challenge is magnified. In this study we tried to assess those surgical neonates presented and managed in Sinnar Teaching Hospital in south of Sudan from february2013 to February 2014 and to describe the outcome of this management.

Results: 145 neonates were managed. Out of them, 83 were males (57.2%), 61 (42.1%) were females while one neonate was intersex (0.7%%). The majority of cases are congenital in nature. Gastro-intestinal tracts diagnoses constitutes more than third of cases with.anorectal malformations predomining all diagnoses.

Keywords: *neonatal surgery, pattern of presentation, type of management, outcome.*

GJMR-I Classification: *NLMC Code: WH 155, WI 480*

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Results: 145 neonates were managed. Out of them, 83 were males (57.2%), 61 (42.1%) were females while one neonate was intersex (0.7%%). The majority of cases are congenital in nature. Gastro-intestinal tracts diagnoses constitutes more than third of cases with.anorectal malformations predomining all diagnoses. 114 patients (78.6%) underwent surgical treatment,while 19 (13.1%) patients were managed conservatively. 57.2% completedtheir treatment successfully 19 (13.1) were ongoing management at the time of data collection. Eighteen died amounting for 12.4% hospital mortality. There was significant correlation between the diagnosis, including gastrointestinal diagnosis and outcome ($P<0.001$) as well as for the type of surgical procedures and outcome ($p<0.001$) also relationship is significant between outcome and duration of illness in the study population.

Keywords: neonatal surgery, pattern of presentation, type of management, outcome.

I. Introduction

The neonatal population, constitutes a considerable proportion of admissions to the surgical wards and this puts a burden on the surgical units and health facilities[1] of the 20 countries with the highest neonatal mortality rates, 80 percent are in Sub-Saharan Africa[2]. The leading causes are congenital anomalies, surgical infections, and trauma[3] 7% of deaths were related to congenital abnormalities[4]. About half of all congenital malformations are surgical, an obvious method of decreasing the burden of childhood disease is the prevention and early treatment of neonatal surgical conditions, many of which result in disability or death when left untreated.[5]

II. Patients and Methods

This is a descriptive, cross-sectional hospital-based study conducted at Sinnar Teaching Hospital. A preformed questionnaire is structured to elicit relevant personal and demographic data of the neonates, then the presenting problem and the associated abnormalities with the full clinical assessment which was performed .The pathology and type of management with the outcome were clearly documented. The last item is followed more in the out-patients clinic. On 2012 the total number of registered deliveries in Sinnar State was 25.305 (Sudan Federal Ministry of Health statistics). The only and the single university-based teaching hospital in Sinnar state caring for this huge number is Sinnar Hospital where the the pediatric surgery unit is part of the surgical department (90 beds), it was established on 2009, it consists of one pediatric surgeon, one or two surgical registrars, two medical officers and eight to ten house officers, it accepts all children from day one to the adolescence with the minimum facilities so the number presented face the limited resources. neo-borns with surgical problems are managed in the general surgical ward which minimally equipped to receive adult as well as and neonatal patients. The working personnel in the theatre& wards are not trained to professionally managing neonates so operations are achieved by technicians .Neonatal surgical cases were initially handled by the general pediatrician in ER where some sort of emergency resuscitation are afforded for the needing neonates. After that referral for the surgical unit is selective for only cases likely to be managed there, otherwise direct referral to more specialized centre out of the state is preferred. Evaluation of neonates was largely clinical, supported by simple laboratory tests and plain X-ray. This situation made the unit to limit surgical intervention to only those in special need for urgent intervention; others are preferred to be operated beyond neonatal life.

III. Results

A total of 145 neonates were managed. Out of them, 83 were males (57.2%), 61 (42.1%) were females while one neonate was intersex (0.7%). most of the study population came from different areas out of the reach of Sinnar. Therefore, 60% (n=87) of the study population needed more than hour transportation time to reach) however, transportation time is not significantly associated. The majority 90.3% (n=112) of the cases were having congenital diagnoses whereas Gastro-intestinal tracts diagnoses constitutes more than 37% (n=54) of cases, other cases are abdominal wall

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defects, neural tube defects, umbilical granulomas, haemangiomas and vascular malformations, musculoskeletal malformations, genitourinary diagnoses and other various clinical conditions. Anorectal malformations predominated the G.I T diagnoses. 114 patients (78.6%) underwent surgical treatment, while 19 (13.1%) patients were managed conservatively. A total of 83 (57.2%) were successfully managed in the hospital, 19 (13.1%) were still on management at the time of data collection. Eighteen died amounting for 12.4% hospital mortality. There was significant correlation between the diagnosis, including gastrointestinal diagnosis and outcome (P <0.001) as well as for the type of surgical procedures and outcome (p <0.001) also relationship is significant between outcome and duration of illness in the study population.

Table 1 : Frequency distribution of the clinical Diagnoses of the studied neonates

Clinical diagnoses	Frequency	Percentage
Gasrointestinal diagnosis	54	37.24%
Umbilical granuloma	19	13.10%
Abdominal wall defect	16	11.03%
Neural tube defect	12	8.27%
Vascular malformation and haemangioma	10	6.90%
Musculoskeletal	10	6.90%
Genito-urinary	8	5.51%
Septic	11	7.59%
Other	5	3.46%
Total	145	100.0

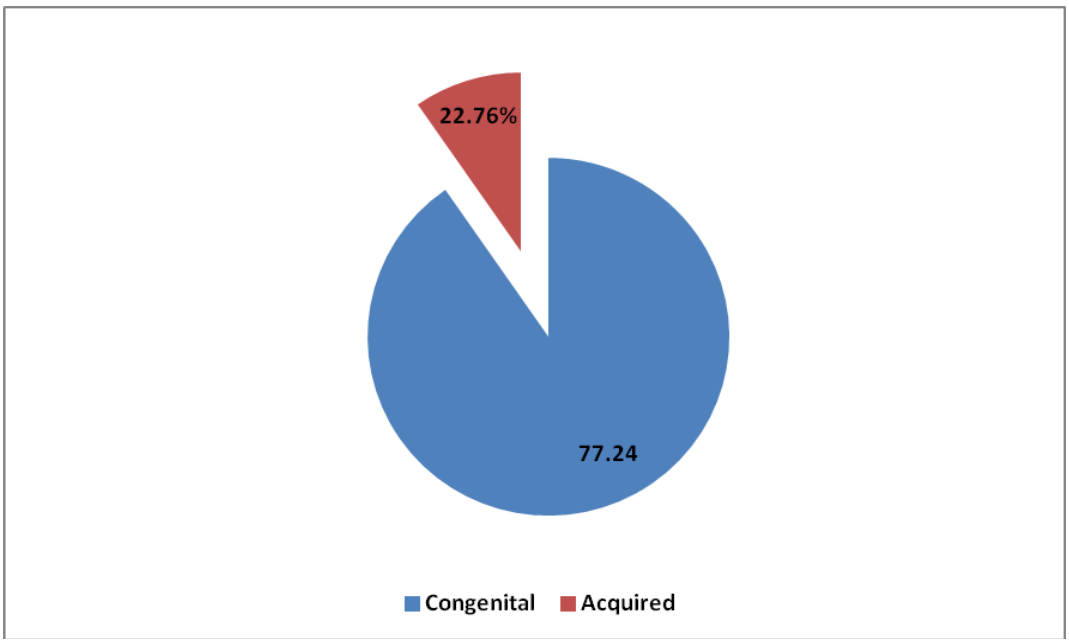

Figure 1 : Congenital versus acquired diagnoses

IV. Discussion

In this study 145 neonates admitted with different surgical conditions to Sinnar Teaching Hospital Surgical Unit were enrolled. This may not reflect the true number because some cases may be referred directly to higher centers due to the sorting system of the hospital as mentioned earlier.83 were males and 61 were females, and there was one intersex. Males predominance was also reported by Ahmed[6] and Ademuyiwa[7]. Our male to female ratio of 1.36:1 is close to Ugwu result[8]. The mean age of infants in this study was 11.61± 8.81 days which is comparable to Ahmed [6]. This age is far more than that reported by Ugwu O (120.29 hours ± 146.47 hours). This young age of presentation in their study might be attributed to the fact that their study was conducted in a tertiary hospital where most of the deliveries were in the hospital whereas our sample was mixed from within and outside deliveries.

Regarding transportion time and it`s effect on outcome, P vaue was 0.912,i,e insignificant.in contrast

to an Indian study which proved that Prolonged neonatal transport (> 1hour) was found to increase the mortality among transported neonates.[9]

In this study, the vast majority of the neonatal surgical conditions were congenital mounting for 77.24%. This figure is very high compared to Mhando in a study from Tanzania[10] who reported a rate of 26% but less than the 88.7% reported by Ugwu[8]this predominance of congenital diagnoses upon other ones may explain the male predominance. An Egeptian study[49] proved this.It hypothetised the occurance of these abnormalities to be genetics, environmental, multifactorial such as Consanguineous marriage (which is common in other Arab countries.[50]

Maternal age, Increasing paternal age above 50 years receival or not of antenatal care with supplementation with folic acid or multivitamin, Multiparity, Maternal obesity, lower socio-economic groups[11]so this needs more sophisticated research in our locality to elicit similar risk factors is only for more efficient measures will be developed to prevent these severe costly and often deadly defects.

A little less than half of neonatal surgical conditions in this study were mainly abdominal. This is less than the figure reported by Ameh et al at a referral hospital in Zaria, Nigeria [13]. The retrospective nature of their study might overestimate abdominal conditions because their records are likely to be adequate rather than for other conditions. However the setting and the condition of transportation and home delivery were the same as for this study. Rate of gastrointestinal diagnoses in this study is similar to Ugwu et al results (43.7%)[8] but much lower than that reported by Sowande et al [14](82%). However, Sowande and colleague work was mainly concerning emergency neonatal surgical condition compared to our population which included elective cases as well, a factor raising their figure because most of the emergencies are likely to be abdominal as well as well as congenital gastrointestinal lesions. In a hospital based retrospective review of major congenital malformations in 353 newborns delivered at the Lagos University Teaching Hospital during a 10-year period(1981-1990), revealed also that gastrointestinal malformations were the commonest followed by central nervous system.[15].

In this study the common gastro-intestinal conditions were anorectal malformations, malrotation, atresia, Hirschsprung disease, congenital hypertrophic pyloric stenosis, necrotising enterocolitis and meconieum ileus. Most of the gastrointestinal conditions usually present as emergencies as intestinal obstruction. This is similar to that reported by Ahmed where he reported anorectal conditions as a third of those presenting to Khartoum Teaching Hospital with intestinal obstruction during the neonatal period[6]. The high rate of anorectal conditions might be explained by their easy diagnosis relative to the other gastrointestinal conditions. It is well noticed That many systems are not encountered in the study, for example head and neck cases, thoracic cases, cardiopulmonary cases as well as other commonly diagnoses mentioned in similar studies including neonatal population, this may be due to sorting system mentioned or may be due to fragility of those neonates leading to their loss before arrival at hospital.

In this study more than half of infants with surgical conditions were successfully managed i.e. conservative with or without surgery or referred to a higher centre while a minority were managed with morbidity. Despite lack of basics in our setting, our rate of success of treatment is comparable to to Ugwu et. al. results [8] however their study was conducted in a tertiary hospital. Mixed type of deliveries, home or hospital may not reflect the true outcome and the comparable results might be coincidental. Lack of antenatal care among other factors might probably adversely affect the outcome in this study.

The overall mortality of neonates with surgical conditions in this study was 12.4%, a much lower figure than Ugwu *et. al.*[8] Other authors had even higher mortalities ranging from 30% to more than 42%[13,16,17] The small sample and the rural nature of the hospital, which lacked a neonatal intensive care unit, might render admission of difficult cases and hence relative reduction of endangered cases. This was clearly illustrated in this study as a high mortality among infants who underwent staged surgery and repair. The nature of management of neonatal surgical condition offered at Sinnar Hospital was a favourable factor associated with better outcome in this study. Delay in presentation shortage of personnel and inadequate facilities as being the major problems associated with management of neonatal surgical patients were identified in other studies[13,16,18]. Most deaths are justified by sepsis, respiratory causes, anaesthetic causes electrolytes imbalance, meningitis and associated cardiac disease. But because of delayed presentations and since deficiencies of monitoring and support facilities, incubators, NICU, trained available staff, plus scarcity of laboratory blood cultures and arterial blood gases measurements; mortalities can said to be multi-factorial of dehydration, infections, hypothermia and all above factors. There were significant correlation between diagnoses, duration of illness, type of surgery and outcome. Regarding transportation time effect on out come, P. value is 0.912, i,e insignificant, in contrast to an Indian study which proved that Prolonged neonatal transport (> 1 hour) was found to increase the mortality among transported neonates[19]

This study, however, has its own limitations. The small sample is a limiting factor. The state of antenatal care and the gestational age were not studied as possible confounders in this study and as for all hospital

studies results may not be generalized for the whole population thus further wide-scale surveys are needed.

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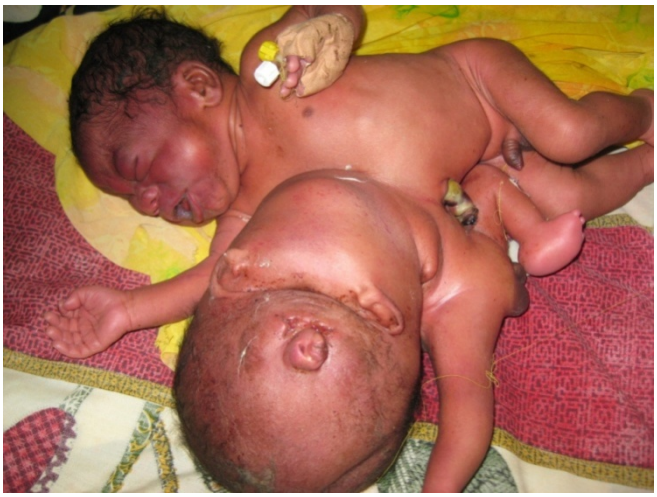

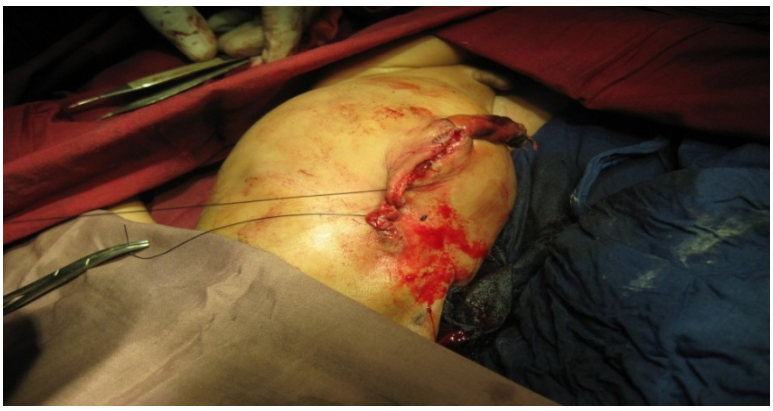

Photographs tell the story of successful surgery performed on the conjoint twin during the study.

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Paraganglioma of Mesentery of Jejunum–A Case Report and Review of Literature

By Dr. Raghuveer M N, Prof. G Siddesh, Dr. Girish T U & Dr. Mohammed Raza
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Abstract- Extraadrenal paraganglioma constitute only 10%. Among them paraganglioma outside usual distribution is less than 1%. Most of the cases are solitary and sporadic. Familial cases are also seen. They are associated with several syndromes. Extra-adrenal paragangliomas are rarely diagnosed preoperatively unless the lesion is functional. Paraganglioma of mesentery of small intestine are very rare. Till date 10 cases are reported and this is the eleventh case. This is the second case where the paraganglioma is in the anterior aspect of the mesentery of small intestine and 1st reported case involving the wall of jejunum. Our case is the youngest reported till date. We hereby report a case of 23 years male patient who presented to us with discomfort and mass per abdomen. Investigations revealed a mass in the mesentery of small bowel. Provisional diagnosis was GIST of jejunum. Laparotomy was performed mass was resected, histopathology and IHC revealed the diagnosis.

Keywords: mesenteric tumours, adrenal and extraadrenal paragangliomas, carney's triad, zalbellan pattern, chromogrannin, synaptophysin CD 56, S 100, mib-1 labelling index.

GJMR-I Classification: NLMC Code: WJ 768

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Keywords: mesenteric tumours, adrenal and extraadrenal paragangliomas, carney's triad, zalbellan pattern, chromogrannin, synaptophysin CD 56, S 100, mib-1 labelling index.

I. Introduction

Solid tumours arising from the mesentery of the small bowell are rare and are usually metastatic[1,2,3]. Only a few are primary tumours. Paragangliomas are considered in the differential diagnosis of the solid primary tumours in the mesentery of small bowel[1,3].. Paragangliomas of mesentery are rare neuroendocrine tumours[4]. Still rare are their location in the anterior mesentery adjacent to the small bowel wall[5].

II. Case Report

A 23 years old male patient who was moderately built and nourished reported to our hospital with discomfort in the upper abdomen and a vague mass in the epigastric and left hypochondriac region. On examination blood pressure and pulse were within normal range. A mass of around 10cm x10cm was noted in the left hypochondrium. Its borders were ill defined the upper border could not be felt. Finger insinuation was possible. The mass was not moving with respiration. There was no hepatomegaly or ascitis. There was no lymphadenopathy. Other systemic examination was normal.

Ultrasound abdomen revealed a mass at the tail of pancreas, no mesenteric lymph nodes and no ascitis.

CT scan of abdomen revealed enhancing mesenteric soft tissue leision with Central necrosis (Pic1).

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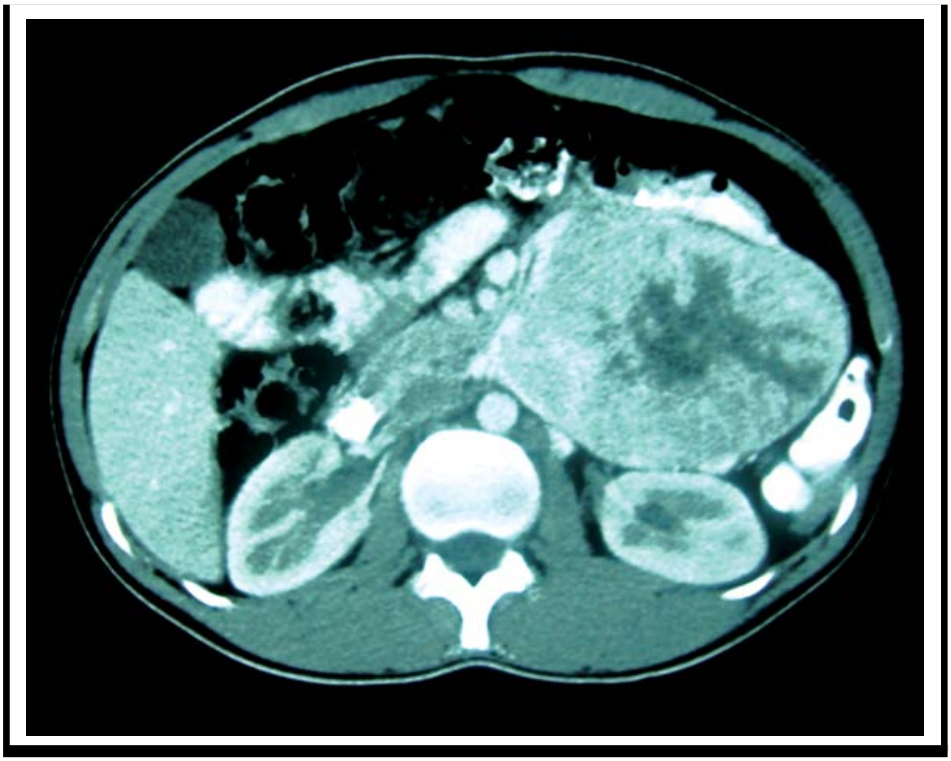
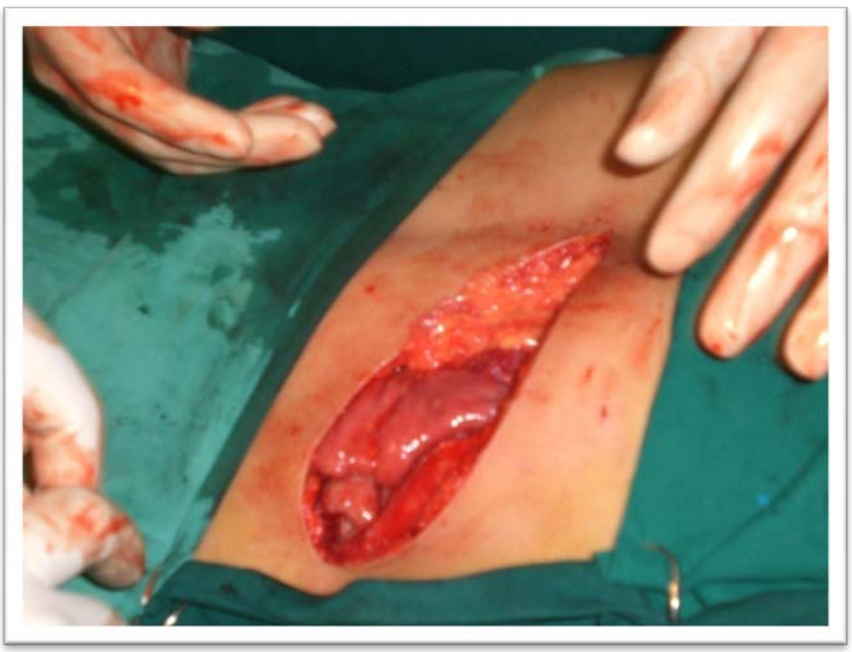


Picture : 1

A GIST arising from the wall of small bowel was suspected. Patient was planned for Diagnostic Laparoscopy. A mass was noted in left hypochondriac region in the mesentery of jejunum with dilated vessels on its surface and a loop of jejunum stretched out on its surface. Mass lying anterior to tail of pancreas. Conver sion to open surgery was done. With left subcostal incision abdomen was opened (Pic 2). A globular mass around 10cm x10cm x9cm was noted in the mesentery of jejunum involving the wall (Pic 3, 4 & 5). Resection of the segment of jejunum was done along with the mesentery and the mass. Jejunojejunal anastamosis was done (Pic 6). Patient had uneventful post operative recovery and he was discharged on 9th postoperative day.



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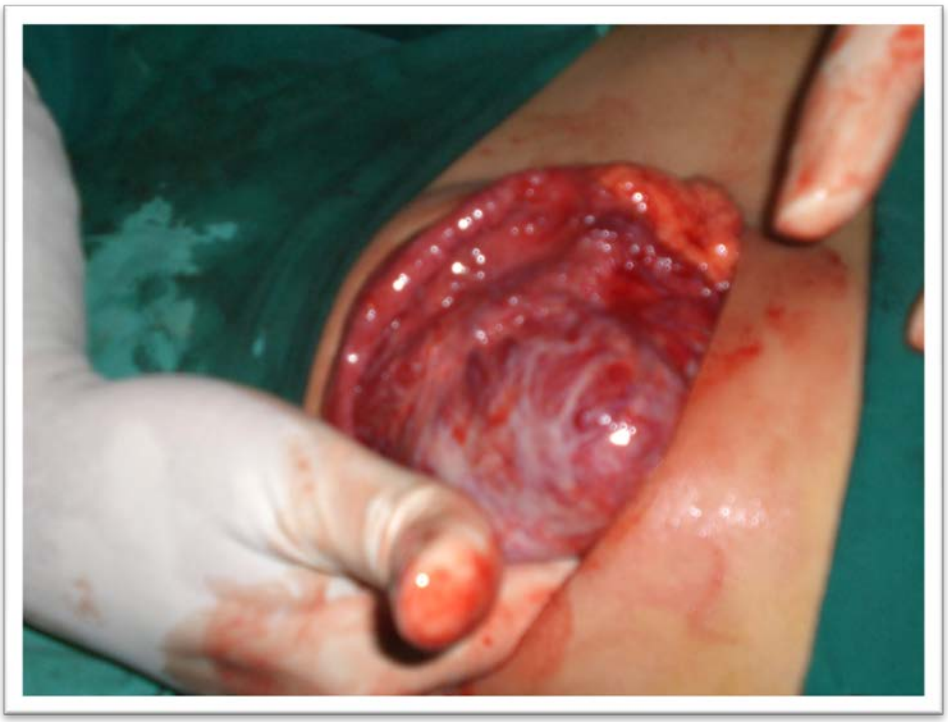

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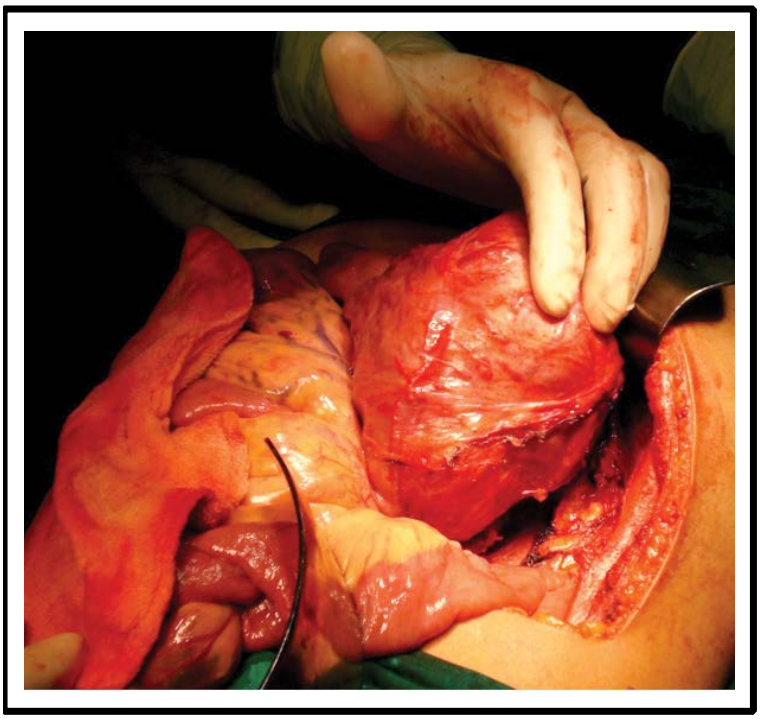

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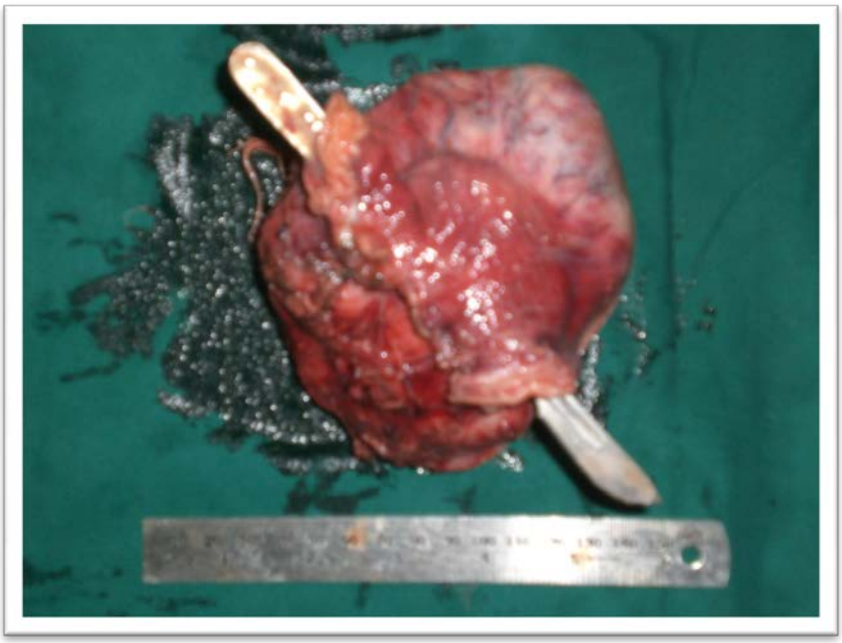

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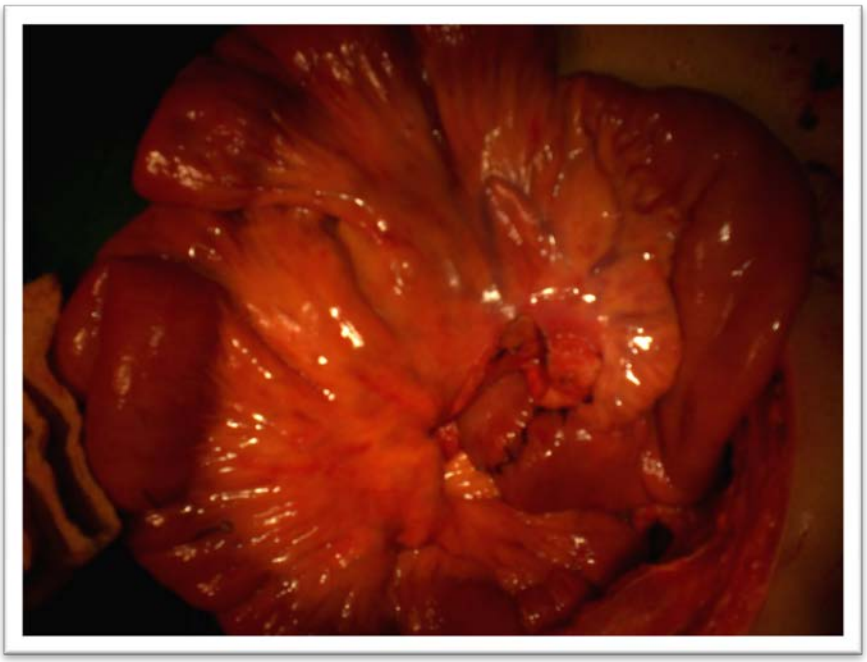
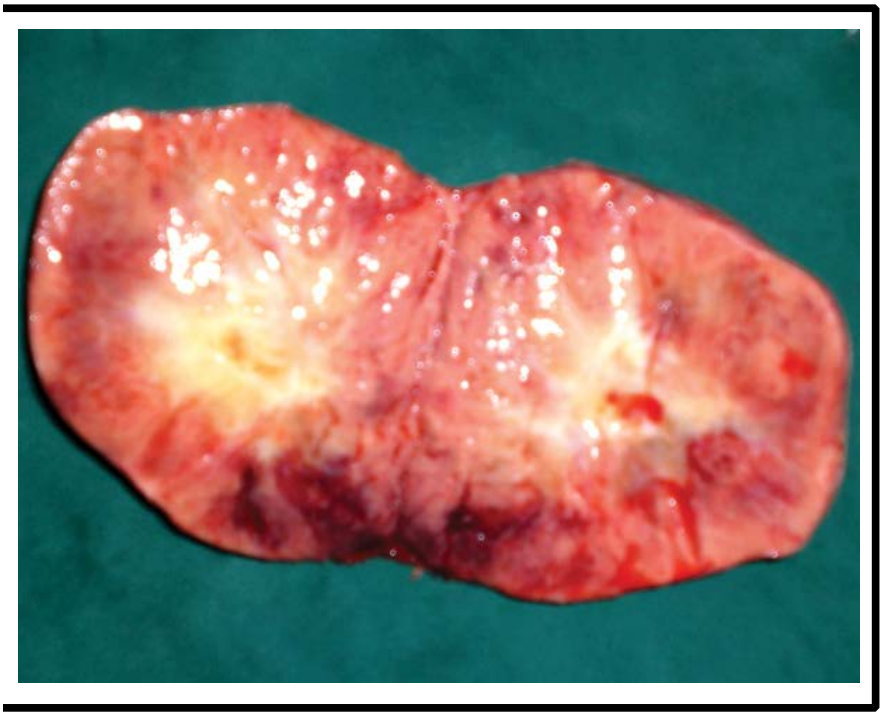


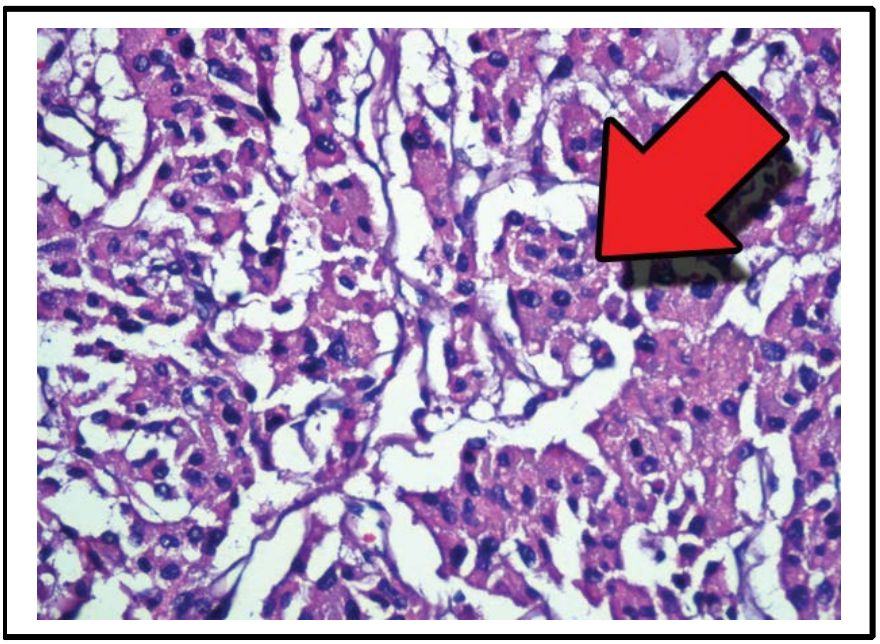
Picture : 6

Morphologically the tumour was well encapsulated and was highly vascular (Pic 4). It was attached to the wall of Jejunum measuring 8cm x 9cm x 10cm. Cut section showed well circumscribed grey white area with central area of haemorrhage and myxoid changes (Pic 7).



Picture : 7

Histopathology revealed nests and groups of tumour cells separated by fibrovascular connective tissue in Zallballen pattern (Pic 8).



Picture : 8

Immunohistochemistry done concurred with HPE reports stating Synaptophysin, Chromogranin and CD56 positive, Mib-1 labeling index is 0 -1%, S-100 protein staining sustentecular cells were also positive.

Since Mib-1(Ki-67) labelling index is low our patient is at low risk for malignancy. The patient is followed up every three months till date (28 months). Patient is asymptomatic, vitals are measured to look for transformation into functional tumour and serial ultrasound evaluation of the abdomen is done to look for recurrence. There is no significant evidence for recurrence or functional transformation.

III. Discussion

Paraganglioma is a rare neuroendocrine neoplasm[1,2,3]. According to WHO classification of neuroendocrine neoplasm they arise from the chromaffin negative cells derived from embryonic negative cells[6]. They belong to Group II tumours as categorized by Wick in updated terminology for neuroendocrine neoplasm[7].

About 75% cases are sporadic and the rest 25% are hereditary[1,4]. In hereditary paragangliomas the leisions are multiple, aggressive and appear at early age[4]. They are usually associated with mutation of genes like Succinate Dehydrogenase (SDHB, SDHC, SDHD called Carney Stratakis Symdrome.)[1,4] , MEN 2a & 2b[4] ,VHL[4] ; NF-1[4] and syndromes like Carney's triad includes gastrointestinal stromal tumor, pulmonary chondroma, and extra-adrenal para gang-lioma[8].

In the fetal life, paraganglionic tissue is derived from pheochromoblasts, highly concentrated at a level extending from the root of the inferior mesenteric artery or the renal artery to the aortic bifurcation, known as the organ of Zuckerkandl. In the adults the neoplasms arising from paraganglia occur most frequently in the adrenal medulla, where they are called as pheochromocytoma. The remaining small amount of normal paraganglionic tissue occurs in extra-adrenal sites extending from the upper cervical region to the pelvis, paralleling the autonomic nervous system. Neoplasms derived from paraganglionic tissue in these sites are known as paragangliomas[5]. Paraganglioma can arise from carotid and aortic bodies, organ of zuckerkandle and other unnamed paraganglia in the distribution of sympathetic and parasympathetic outflow [4,9]. Small amounts of paraganglionic tissue have been described in sites outside the conventional distribution such as in the interatrial septum of the heart, liver hilus, gallbladder, urinary bladder, prostatic capsule, and mesenteric vessels potentially capable of giving rise to paragangliomas in these unusual sites[10]. Extraadrenal paragangliomas outside the distribution of the autonomic nervous system, where normal paraganglia have not been described can probably be explained by the migratory property of the neural crest cells during embryogenesis along the blood vessels[3,4.] Under the Glenner and Grimley classification these paraganglia may qualify as the viscero-autonomic type, a group of poorly defined paraganglia that occur in association with visceral organs[11].

Approximately 5% to 10% of sporadic cases occur in extra adrenal sites[4]. 70% to 80% of these cases are intraabdominal most common being adjacent to aorta[4]. Paraganglioma of mesentery of small intestine is extremely rare with only 10 cases reports till date. Our case is the eleventh case with paraganglioma in anterior part of the mesentery involving the bowel wall. This is the second reported case with paraganglioma in the anterior mesentery. This is the first reported case involving the bowel wall.

The previously reported cases with paragonglioma in the mesentery of small intestine are as shown in the Table-1. Most of the cases were above the age of 60 yrs. And our case is the youngest, earliest presentation at 23 years. Most of patients were females (F:M;;7:4). Except for the case report by Jaffer et al all other cases are posterior mesenteric paragangliomas[5]. Our case is the second reported anterior mesenteric paraganglioma of small bowel. All cases were managed with resection of the bowel with involved mesentery and mass followed be anastamosis.

Table 1 : Clinical information about the previous reported cases

Sl. No.	Reference	Age	Sex	Tumour location in mesentery	Symptoms	Size of tumour (cms)	Htn	Pre Op diagnosis	Surgery	Prognosis
1	Arean et al.[12]	32	M	Small intestine. (Posterior)	Nausea, vomiting, diarrhea.	10x7x6	-	Abdominal mass.	Resection and anastamosis	8 m. Alive No recurrence
2	Carmichael et al.[13]	62	F	Small intestine. (Posterior)	Nausea, vomiting, bach ache.	3.2	+	Abdominal mass.	Resection and anastamosis	Not documented
3	Onoue et al.[14]	38	F	Small intestine. (Posterior)	None.	4.5x3.2	-	Mesenteric mass.	Resection and anastamosis	24 m. Alive No recurrence
4	Jaffer et al.[5]	76	M	Small intestine. (Anterior)	Pain abdomen, vomiting, diarrhea.	8.5x8	+	Abdominal mass.	Resection and anastamosis	Not documented

5	Muzaffer et al.[15]	76	F	Small intestine. (Posterior)	Mass in the abdomen	20x15	-	Abdominal mass.	No document.	15 m. Alive No recurrence
6	Ponsky et al.[16]	35	F	Small intestine. (Posterior)	Mass in the abdomen	5.5	+	Abdominal mass.	Resection and anastamosis	24 m. Alive No recurrence
7	Kudoh et al.[17]	72	F	Ileum (Posterior)	Pain abdomen and mass	10x9x9	-	Mesenteric tumour.	Resection and anastamosis	12 m. Alive No recurrence
8	Nobeyama et al.[18]	53	M	Ileum (Posterior)	Pain abdomen and mass	15x10x7	-	Abdominal mass.	Resection and anastamosis	Not documented
9	Matsumoto et al.[19]	77	F	Small intestine. (Posterior)	Pain abdomen and mass	7x5.5	-	Mesenteric tumour.	Resection and anastamosis	9 m. Alive No recurrence
10	Fujita T et al.[4]	78	F	Small intestine. (Posterior)	None	3x1.5x1.5	-	Mesenteric tumour.	Resection and anastamosis	8 m. Alive No recurrence
11	Present study	23	M	Jejunum (Anterior)	Abdomendi scomfort and mass	8x9x10	-	GIST of jejunum	Resection and anastamosis	28 m. Alive No recurrence

Most of the extra adrenal paragangliomas are asymptomatic or present as a mass and mass associated symptoms[1,4]. 1% to 3% of them are functio nal due to catecholamines released and presents with paroxysmal episodic hypertension, palpitation, headache or profuse headache[1,4]. If the extra adrenal paraganglioma is functional diagnosis is easy[4] first investigation would be biochemical analysis of catecholamine in serum should be done before any imaging[4].

Majority of cases are found incidentally in patients evaluated for other reasons[4]. CT features are nonspecific soft tissue density and these features are similar to any other neoplasm. Hence preoperative diagnosis of extra adrenal paraganglioma is usually difficult. MRI and Angiography may be useful to know the soft tissue involvement and vascularity of the tumour[4]. Though I^{131} Metaiodobenzyl guanidine (MIBG) schintigraphy[4] is useful in functional tumours it can be used to rule out clinically silent cases. FDG-PET[4] scan may be helpful to locate metastasis and is superior to MIBG schintigraphy. Mitotic figures and Ki-67 labelling index[4] are of significance in malignant case grading.

Treatment is surgical resection[1,4]. Most of the times significant mesentery has to be removed hence resection of the bowel is inevitable and anastamosis is required. Adjunctive therapies like Radiotherapy and chemotherapy can be considered palliative in malignant cases and unresectable cases[2]. Patients with malignant paraganglioma respong to multikinase inhibitor SUNITI NIB MALATE[20].

Histologically, paragangliomas have well-defined characteristics. The lesions are composed of cell balls (Zellballen) separated by thin fibrovascular septa[1]. These cell balls are composed of two types of cells chief cells and sustentacular cells[1]. Other patterns are angiomatoid, fusocellular and clear cell. Some paragangliomas show intense fibrosis, which can compress and distort the cell balls, giving rise to a pseudoinfiltrative appearance (sclerosing paragangliom as)[1].

With immunohistochemistry the chief cells are positive for neuroendocrine markers (neuron specific enolase, chromogranin A, synaptophysin,serotonin) while sustentacular cells are positive for S-100 protein[1].

Cervical lymphnode metastases are noted in retroperitoneal paragangliomas. 15%-40% of extra adrenal paragangliomas undergo malignant transforma tion[4]. In these cases clinical and histological distinction between benign and malignant tumours is difficult. Only presence of metastasis can prove malignancy.

Neither local nor distant metastasis are reported in paragangliomas of mesentery of small intestine till date. In retroperitoneal tumours 5yrs and 10yrs survival rates are 75% and 45% respectively[4]. But the prognosis for paraganglioma in the mesentry of small intestine is

not available. Recurrence of mesenteric paraganglioma is not reported till date. However long term follow up after surgical resection is advised[4].

IV. Conclusion

Paraganglioma of mesentery of small intestine is a very rare disease. Our case is the 11th case reported, 2nd case with anterior mesenteric paraganglio ma of jejunum and 1st reported case involving the wall of jejunum. This is youngest patient reported with this tumour till date. It is difficult to diagnose a case of paraganglioma in the mesentery of small intestine preoperatively. Hence it should be considered in the differentials when managing a patient with a solid tumour in mesentery. It also prevents disasters peroperatively in case of catecholamine producing tumours[1,3]. Postoperatively patient should be followed up for very long periods to look for recurrence[4].

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Splenic Injuries in Abdominal Trauma Modern Management Based on Anatomical Knowledge

By Dr. Ashfaq ul Hassan, Dr. Shifan Khanday, Prof. Nisar Chaudhary, Dr. Obaid, Dr. Muneeb Ul Hassan & Dr. Zahida Rasool

SKIMS College, India

Abstract- The spleen is one of the most commonly injured organs in the body to get traumatized. It can be associated with significant mortality. It is commonly injured following penetrating trauma and one of the most most commonly injured organ following blunt trauma to the left side if abdomen. Due to the soft consistency the injuries are often minor and can be easily managed. The article pinpoints the various anatomico surgical facts in relation to spleenic injuries. We report two cases of abdominal trauma where both the patients had spleenic injuries. Due to the immunological role of spleen and the recognition of the fact that spleenectomy renders patient suscept to life long risks of sepsis, the shift and focus has been towards spleenic conservation in most cases.

Keywords: *trauma, gastrospleenic, spleenectomy, spleenorapgy, transplant, OPSI.*

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Splenic Injuries in Abdominal Trauma Modern Management Based on Anatomical Knowledge

Dr. Ashfaq ul Hassan [α], Dr. Shifan Khanday [σ], Prof. Nisar Chaudhary [ρ], Dr. Obaid [ω], Dr. Muneeb Ul Hassan [¥] & Dr. Zahida Rasool [§]

Abstract- The spleen is one of the most commonly injured organs in the body to get traumatized. It can be associated with significant mortality. It is commonly injured following penetrating trauma and one of the most most commonly injured organ following blunt trauma to the left side if abdomen. Due to the soft consistency the injuries are often minor and can be easily managed. The article pinpoints the various anatomico surgical facts in relation to spleenic injuries. We report two cases of abdominal trauma where both the patients had spleenic injuries. Due to the immunological role of spleen and the recognition of the fact that spleenectomy renders patient suscept to life long risks of sepsis, the shift and focus has been towards spleenic conservation in most cases.

Keywords: trauma, gastrospleenic, spleenectomy, spleenorapgy, transplant, OPSI.

I. Introduction

Trauma to abdomen is common and spleen is commonly injured. The large size of organ, soft consistency , the location in upper left quadrant of abdomen and high vascularity makes it vulnerable and injuries of liver can well managed by having a good understanding of Anatomico surgical knowledge.

II. Text

The spleen is an intra abdominal organ located in the left hypochondrium and the most commonly injured intra-abdominal organ. [1]Splenic injury must be suspected in any patient with blunt abdominal trauma, particularly if associated with left lower rib fractures. The shift in focus from to splenic repair or non operative management as viable options in selected patients is a recent trend.

The spleen lies obliquely along the long axis of 10th rib. It lies mainly in left hypochondrium but the posterior end extends into epigastrium. It is directed downwards, forwards and laterally. Visceral surface is concave and has Gastric impression for fundus of stomach, Renal impression for left kidney, Colic impression for splenic flexure of colon, Pancreatic impression for tail of pancreas. In addition the hilum transmits splenic vessels and nerves. It provides attachment to gastrosplenic and lienorenal ligaments.

The knowledge of segmental anatomy and blood supply of the spleen make splenic salvage a possibility.[2] The main source of blood supply to the epleen is the splenic artery which is a branch from the celiac trunk and divides into several segmental branches in the hilum, entering the spleen surrounded by the white pulp where they are known as central arteries. Leaving the white pulp, the blood passes through an ill-defined vascular space called the marginal zone before entering the venous sinuses of the red pulp. Most spleen injuries result in various degrees of transverse rupture of the spleen following the trabeculae and segmental blood supply .[3,4]

Spleenic injuries which are minor in the form of a simple rent in or around the the capsule may be treated by a mattress suture. The same can be applied to a minor degree of puncture or stab wound. In case of a laceration that does not involve the hilum of the spleen and that has adequate blood supply to all segments, a series of transverse mattress sutures over cut pledgets to reappose the cut surface of the spleen. In case of severe and significant injuries may require partial resection or complete wrapping of the spleen. Successful splenorrhaphy is a safer alternative and should be preffered in comparison to speenectomy wherever a possibility of saving spleen arises. It requires complete mobilization of the spleen. The splenic pedicle is approached through the gastrosplenic ligament, and the vessels in the hilus of the spleen supplying the injured portion of the spleen are ligated. Demarcation of the devascularized segment then becomes apparent, allowing accurate segmental resection of the injured tissue. The technique of wrapping the spleen in an absorbable mesh compression envelope has value for extensive capsular avulsions. Other adjuncts useful in obtaining splenic hemostasis include microfibrillar collagen, thrombin,

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fibrin biologic glues, and the argon beam cautery-coagulator. The benefits of spleenic repair outweigh the risks of removing spleen. The risk of overwhelming post spleenectomy sepsis is reduced significantly .[5]

Total Splenectomy: Despite the segmental arrangement of the splenic arterial supply, the friability of the spleen often renders repair or partial resection impossible. The primary indications for splenectomy following trauma are continued bleeding after attempted splenic repair, extensive fragmentation, hilar vascular injury, massive subcapsular hematoma, severe associated injuries requiring prompt attention and total avulsion of the spleen.

Most reserve splenic repair for patients in whom it is an isolated organ injury, who are normotensive, and do not have other bodily injuries of greater priority. In addition, splenic salvage is probably not warranted if only 50% or less of the splenic substance is to be preserved. The technique of implanting thin splenic fragments in an omental pouch (auto transplantation) is looked into and can provide significant long-term splenic function. The general conscience is that the safety and effectiveness of nonoperative management in isolated splenic injuries is confirmed.[6,7]

The risk of delayed splenic rupture in these patients is small but must be considered, and the patient must be cautioned accordingly. Delayed rupture may be due to an enlarging subcapsular hematoma, rupture of a traumatic arterial pseudoaneurysm, or simply recurrent or ongoing hemorrhage that is finally clinically inescapable. The long-term risk of splenectomy for isolated spleen injury (including the operative mortality and the long-term risk of OPSI) is probably a maximum of 1.5%. It seems rational that any alternative to splenectomy for isolated splenic injury must not exceed this long-term risk.

III. Conclusion

The Knowledge of anatomy of the spleen, its relations and the distribution of injuries permit separation of the role of each of these approaches. Splenic trauma management remains a significant challenge for emergency surgeons especially with the occurrence of Post spleenectomy injuries.

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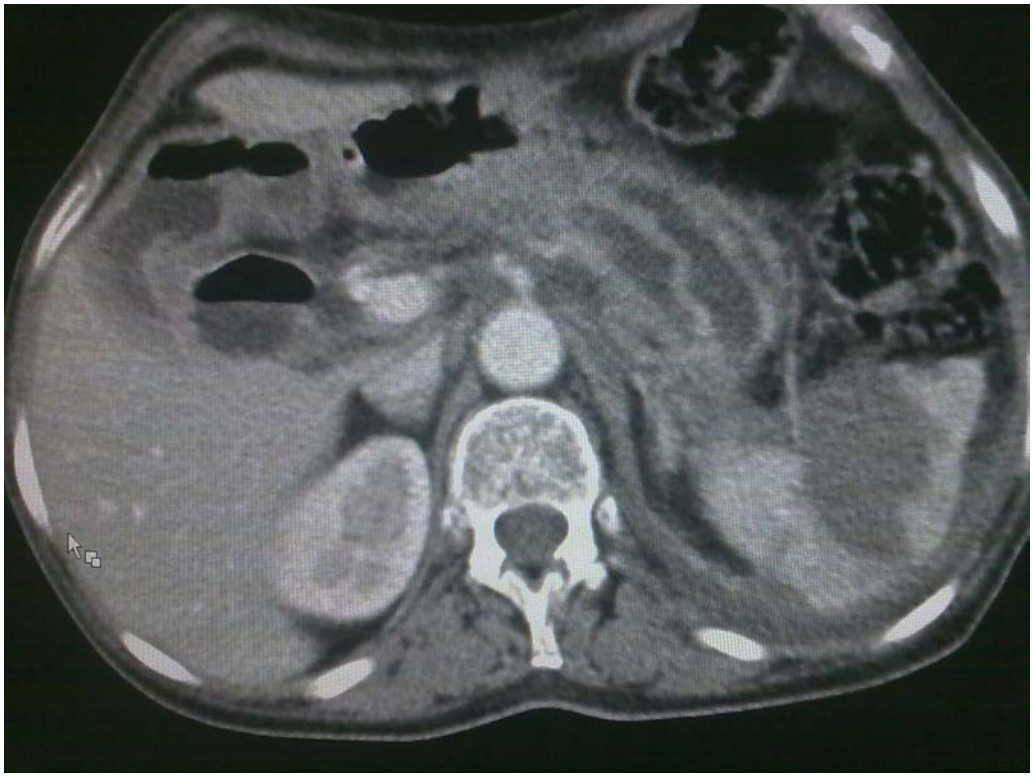

Figure 1 : CT Scan demonstrating Splenic injury

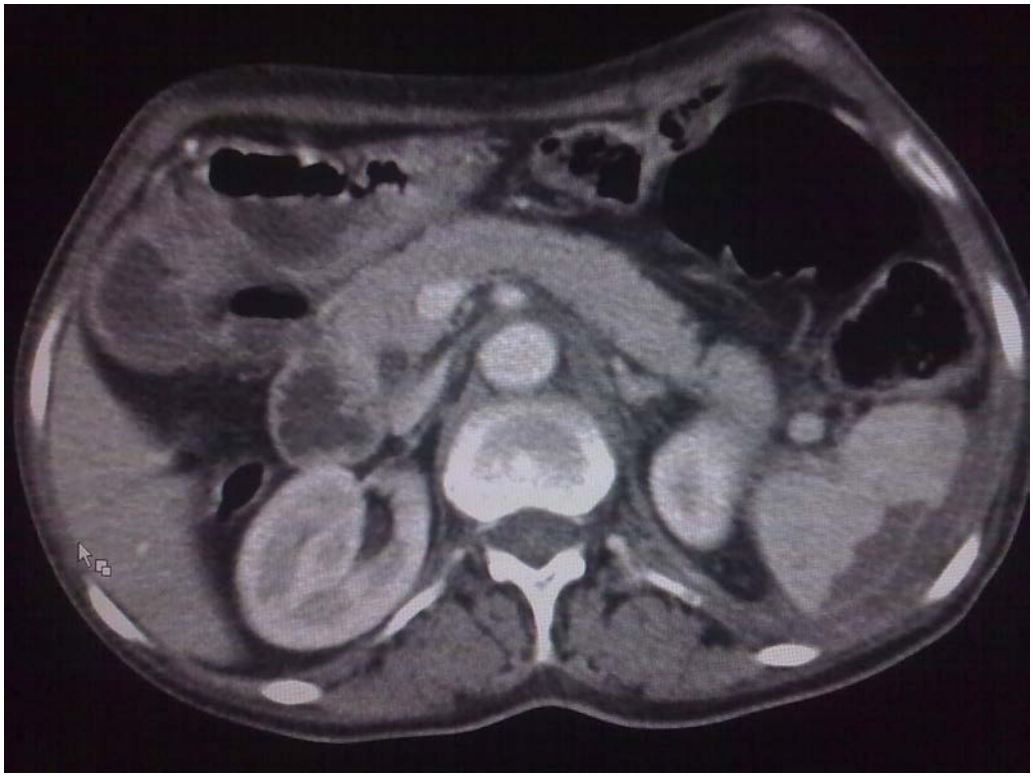

Figure 2 : CT Scan demonstrating Splenic injury

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"Atherosclerotic Renal Disease in Elderly"

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Introduction- Atherosclerosis is a generalized and inflammatory vascular disease frequently associated with renal disease and dysfunction (1) and one of the major causes of premature death in the United States today(2,3). Diverse renal vascular diseases, including atherosclerotic renal disease (ARVD), account for more than one third of all cases of ESRD.(4) Atherosclerotic plaques are present in up to 30% of patients with CKD and ARVD is among the common causes of CKD in Western societies(5,6). Atherosclerotic changes in the renal artery are evident in 50% of patients with atherosclerotic disease previously (7) and in 6.8% of adults > 65 years or age, they induce significant (>60%) renal artery stenosis.(8)In this review we discuss the pathogenesis and types of atherosclerotic renal disease in elderly including atherosclerotic renovascular disease and atheroembolic renal disease.

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"Atherosclerotic Renal Disease in Elderly"

Dr. Harsh Vardhan [α] & Dr. Vikas Singh [σ]

I. Introduction

Atherosclerosis is a generalized and inflammatory vascular disease frequently associated with renal disease and dysfunction (1) and one of the major causes of premature death in the United States today(2,3). Diverse renal vascular diseases, including atherosclerotic renal disease (ARVD), account for more than one third of all cases of ESRD.(4) Atherosclerotic plaques are present in up to 30% of patients with CKD and ARVD is among the common causes of CKD in Western societies(5,6). Atherosclerotic changes in the renal artery are evident in 50% of patients with atherosclerotic disease previously (7) and in 6.8% of adults > 65 years or age, they induce significant (>60%) renal artery stenosis.(8)In this review we discuss the pathogenesis and types of atherosclerotic renal disease in elderly including atherosclerotic renovascular disease and atheroembolic renal disease.

II. Pathogenesis

Atherosclerosis results from a series of cellular and molecular responses to endogenous and exogenous insults, and cellular events involved early in atherogenesis resemble those triggered in other forms of CKD. Perhaps because glomerular cells mimic some of the characteristics of cells in the vessel wall, atherosclerosis and glomerulosclerosis are postulated as comparable processes (9,10,11)

At an earlier stage, hypertension and atherosclerosis may be intimately linked through their effects on endothelial function. A dysfunctional endothelium allows adhesion of lipid-filled macrophages and consequent chemotaxis and aggregation of inflammatory cells. In large vessels, hypertension favors atherosclerosis progression primarily by accelerating the conversion of fatty streaks to raised lesions.12 Eventually, the vascular lesions can progress to vessel wall necrosis (fibrinoid necrosis, necrotizing arteriolitis, and hyperplastic arteriolosclerosis),which may extend to the glomerulus as well (necrotizing glomerulitis).13 Upregulation of angiotensin-converting enzyme and angiotensinII in the walls of atherosclerotic arteries underscores the role of the renin-angiotensin system in the pathogenesis of atherosclerosis in hypertension. Ang II leading to an increase in reactive oxygen species (ROS) production (eg, superoxide anion) and consequently increased oxidative stress.14 ROS can induce vasoconstriction directly and by decreasing NO bioavailability, resulting in endothelial dysfunction.

Summary of Renal Morphological Changes Induced by Traditional Cardiovascular Risk Factors

Kidney Characteristics	Risk Factor			
	Hypertension	Diabetes	Hypercholesterolemia	Obesity
Size	Normal or decreased	Increased	Normal	Increased
Vessels	Arteriolar hyalinization, perivascular fibrosis, increased media-to-lumen ratio			
	Endothelial Dysfunction			
Glomerulus	Late sclerosis	Mesangial thickness. Diffuse, nodular, and global sclerosis	Early minimal changes Late sclerosis	Late sclerosis
Tubules	Tubulointerstitial fibrosis and atrophy	Tubulointerstitial fibrosis and atrophy	Tubulointerstitial fibrosis	Tubulointerstitial fibrosis

III. Atherosclerotic Renovascular Disease

Chronic ischemic renovascular disease is an increasingly recognized disorder. The prevalence and incidence of atherosclerotic renovascular disease based upon administrative data in the general population greater than 65 years of age were estimated to be 0.5 percent and 3.7 per 1000 patient-years, respectively.It has been estimated that ischemic renovascular disease may beresponsible for 5 to 22 percent of patients with advanced renal failure who are over the age of 50 [16-19].

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a) Clinical Clues

There are a number of clinical findings that suggest an increased likelihood of secondary hypertension, some of which specifically suggest the presence of renovascular disease. These clinical clues are important for a second reason in patients with renovascular disease that is diagnosed on an imaging study performed for some other reason. In such patients, the absence of any of these clues makes it much less likely that the renovascular disease is responsible for hypertension, if present, and therefore makes benefit from percutaneous or surgical intervention less likely. This is an important issue since bilateral (or unilateral) atherosclerotic renovascular disease can be an incidental finding on angiography for peripheral artery disease, occurring in patients with little or no hypertension [20,21]. Such patients do not require therapy directed at the renal vasculature, since there is no evidence that revascularization will improve renal or other outcomes in this setting. A few patients with chronic ischemic renovascular disease are normotensive, which may be due in part to a reduced cardiac output. The clinical clues include

- Onset of hypertension at >55 years of age.
- Accelerated, treatment resistant or malignant hypertension.
- Unexplained difference in kidney size >1.5 cm.
- Recurrent unexplained pulmonary edema.
- Worsening renal function after ACE inhibitor treatment.
- Unexplained renal dysfunction.
- Evidence of peripheral artery disease or CAD.

b) Investigation

Variety of imaging studies are available. The screening test should be

- Readily available
- Noninvasive, nonnephrotoxic
- Provide an anatomic diagnosis
- Indicate its functional significance
- Identify patients likely to benefit from intervention

i. *Catheter angiography*

Catheter angiography using X-radiation and iodinated contrast injected by catheters is the gold standard for the diagnosis of renal artery stenosis.(22) It offers the highest spatial and temporal resolution available for anatomically visualizing main and branch renal artery stenoses. However, this method shows large interobserver variation for the location and grade of stenosis (k concordance coefficients 0.26e 0.70). (23,24) An important advantage of catheter angiography is that a hemodynamically significant stenosis can be immediately treated in the same session. Improvements in imaging techniques with greatly increased contrast resolution and optimized catheter shapes, have resulted in reduction iodinated contrast exposure. Use of carbon dioxide or gadolinium instead of iodinated contrast to reduce nephrotoxicity has been explored with equivocal results. This invasive intervention is associated with the risk of contrast induced renal dysfunction, atheroembolic episodes, bleeding, dissection and arterial injury and thus is not a suitable screening technique as RAS is responsible for only a small group of patients with uncontrolled hypertension and renal failure.

ii. *Ultrasound*

Ultrasounds seem to be an ideal screening modality for RAS as it is noninvasive with low cost and free from risks of radiation exposure and contrast related renal dysfunction. It is observer dependant its accuracy varies between 60 and 90% especially transplant kidney. (25,26) The major drawback of this modality is poor visualization of the entire renal artery missing the highest peak systolic velocity at a stenosis using spectral Doppler tracing. Besides this accessory renal arteries are generally not well visualized. Due to abdominal gas and fat limits the visualization of renal vasculature resulting in increased rate of technical failure in comparison to other modalities. RAS can be both proximal and distal based on certain criteria.

iii. *Doppler criteria for RAS*

Proximal criteria

These are direct signs obtained at the site of the stenosis. Four criteria are used to diagnose significant proximal stenosis or occlusion of the RA.The first and most important sign is the increase in peak systolic velocity (PSV). Velocities >180 cm/s suggest stenosis of >60%, while an end-diastolic velocity >150 cm/s suggests a degree of stenosis >80%. In a meta-analysis, PSV was the best predictor of RAS, with a sensitivity and specificity of 85% and 92%, res-pectively. 40The third criterion is the identification of RAS with no detectable Doppler signal, a finding that indicates occlusion. The fourth criterion is the visualization of color artifacts such as aliasing at the site of the stenosis and the presence of turbulence at Doppler evaluation indicating the presence of a significant stenosis upstream.Usually, these two patterns are the first and immediate signs of a stenosis. (27,28)

c) Distal criteria

The difficulties related to the direct evaluation of the stenosis (the mean examination time was 69 min for the complete examination and 14 min for the distal evaluation) have led several investigators to search for and to identify waveform alterations, other than increased velocity, distal to the stenosis in arterial segments more accessible with Doppler US (i.e., hilar or interlobar arteries).The rationale is that the flow at the renal hilum downstream to a hemodynamically significant stenosis should become damped and show a slow rise to the peak systole.This phenomenon has been called the “tardus parvus” effect. Tardus means

slow and late and parvus means small and little.Tardus refers to the fact that systolic acceleration of the waveform is slow with consequent increase in time to reach the systolic peak.Parvus refers to the fact that the systolic peak is of low height, indicating a slow velocity. A retarded acceleration of less than 3.0 m/s2, and increased acceleration time greater than 0.08-0.10 s. However, these findings may be less specific than peak systolic velocity in the main renal artery and ideally should be used to support the diagnosis based on peak systolic velocity.

d) Resistive index

RI measures the degree of intrarenal arterial impedance and is calculated using the following formula: ([PSV _ end-diastolic velocity] / PSV). RI values measured in healthy subjects show a significant dependence on age and the area sampled. The values in the main RA are higher in the hilar region (0.65, 0.17) than in the more distal small arteries, and they are lowest in the interlobar arteries(0.54, 0.20). Intrinsic renal diseases (i.e., nephroangiosclerosis, hypertension, tubularinterstitial disease, diabetes mellitus, and severe bradycardia) can cause an increase of RI, even in the presence of normal serum creatinine levels. RI >0.8 suggests reduced benefit from intervention.(29)

i. *Computed tomographic angiography*

Advances in CT technology can provide accurate anatomic images of even small renal arteries. A review of 8 studies reveals an average sensitivity of CTA for a diagnosis of significant stenosis of 92% (range 64%-100%), an average specificity of 90% (range 56%-99%), and an average positive predictive value of 88% (range 68%-98%).(25) Compared to conventional angiography, CTA is less invasive with faster acquisition, offers better soft tissue visualization, and allows multiplanar imaging of the renal arteries in any obliquity. The accuracy is comparable to MRA; however, CTA has the risks of ionizing radiation and nephrotoxicity from iodinated contrast agents. Also, when there is severe calcification in the renal arteries, the luminal narrowing may be obscured. However, a major limitation of CTA is that itprovides only an anatomic but not a physiologic assessment of the stenosis. So the widely accepted anatomic criterion of a 75% decrease in cross-sectional area for diagnosing severe and significant stenosis to predict the functional significance of the stenosis without considering the influence of renal blood flow may not be correct. A morphologically severe stenosis might not induce a pressure gradient if the artery has slowflow dueto renal parenchymal impairment. There is no benefit from dilating a severe stenosis when the ischemic nephropathy is already end-stage. It is a class I, LOE B recommendation based on ACC/AHA guidelines to establish the diagnosis of RAS in patients with normal renal function.(36)

ii. *Magnetic resonance angiography*

3-dimensional (3D) gadolinium magnetic resonance angiography (MRA) is accurate for diagnosing renal artery stenosis, comparable to CTA and superior to ultrasound and captopril renography.30-31 The median sensitivity and specificity, compared to conventional catheter angiography, respectively, are 92% and 93.5% without contrast and 96% and 93% with contrast. It not only provides high-quality noninvasive anatomic images but also has the distinct advantage of providing a functional assessment of blood flow and organ function. Some of the divergence in the MRA literature results from some investigators defining stenosis based solely on anatomic criteria. The variety of pulse sequences in MRI that assess organ function complement anatomic information. Combining luminal imaging with functional pulse sequences may offer more comprehensive evaluation of the kidneys
without markedly increasing scanning time or cost.

e) Other screening tests

Other noninvasive screening tests, such as an intravenous pyelogram, plasma renin activity, the captopril renogram, and renal vein renin measurements are no longer considered suitable for screening patients because of their poor sensitivity and specificity. Some of the important ones are going to be discussed below.

f) Plasma renin activity

The baseline plasma renin activity (PRA) is elevated in only 50-80 percent of patients with renovascular hypertension. The utility of peripheral PRA is reportedly enhanced when measured in the morning with the patient in the seated position and when indexed against urinary sodium excretion; when measured under these exacting circumstances, a high peripheral PRA is found in 75%e80% of patients with proven renovascular hypertension. A very low PRA (e.g., less than 0.3 ng/mL/h) indexed against a normal urinary sodium excretion in the absence of drugs known to suppress rennin argue against RAS.32 The predictive value can be increased by measuring the rise in the plasma renin activity 1 h after the administration of 25-50 mg of captopril, a rapidly acting ACE inhibitor. The sensitivity and specificity of the captopril renin test have ranged in different studies from 75 to 100 percent and 60 to 95 percent, respectively. The general utility of this test is limited by the need to discontinue antihypertensive medications that can affect the plasma renin activity (such as ACE inhibitors, alpha-blockers and diuretics), the low sensitivity, and somewhat decreased predictive value when compared to the renogram after ACE inhibition.(33)

g) Captopril renogram

Oral captopril (25-50 mg) is given 1 h before the isotope is injected. The efficacy of this test is based

upon the typical ACE inhibitor-induced decline in GFR in the stenotic kidney, often accompanied by an equivalent increase in GFR in the contralateral kidney due to removal of angiotensin II-mediated vasoconstriction. The net effect is that the difference between the two kidneys is enhanced. A marker of glomerular filtration, such as DTPA, or compounds that are secreted by the proximal tubule, such as hippurate and MAG3, have been used. The latter may be more reliable in patients with renal insufficiency. Three criteria were established for diagnosing renal artery stenosis: A percent uptake of DTPA by the affected kidney of less than40% of the combined bilateral uptake. A delayed time to peak uptake of DTPA, which was more than 5 min longer in the affected kidney than in the contralateral kidney. A delayed excretion of DTPA, with retention at 15 min, as a fraction of peak activity, more than 20% greater than in the contralateral kidney. The sensitivity and specificity of the ACE inhibitor scan may, in high-risk populations, exceed 90 percent for highgrade stenotic lesions and for a successful antihypertensive response to correction of the stenosis. It has got a high negative predictive value (90%).34,35 In 2005 ACC/AHA guidelines suggested that it should not be used as a screening test for the diagnosis of renal artery stenosis. (36)

h) Renal vein renin levels

These measurements are obtained by sampling renal vein and inferior vena cava blood individually. The level of the vena cava is taken as comparable with the arterial levels into each kidney and allows estimation of the contribution of each kidney to total circulating levels of plasma renin activity.

i) Progression

The loss of renal function in renovascular disease can result from a usually reversible consequence of antihypertensive therapy or an irreversible reflection of progressive narrowing of the renal arteries and/or progressive intrinsic renal disease. It is unclear what percentage of renal vascular lesions initially found to be stenosed are physiologically important, leading to hypertension and/or renal insufficiency. Few patients with renal artery stenosis that is incidentally discovered on angiography performed for some other reason (eg, peripheral artery disease) progress to end-stage renal disease at prolonged follow-up. [21]

j) Medical Therapy

The principal specific management options in patients with chronic ischemic renovascular disease are medical therapy, angioplasty (usually with stent placement), and surgery. A systematic review of management strategies for renal artery stenosis in general, including bilateral renal artery stenosis associated with renal insufficiency, concluded that the published evidence was inadequate to draw any robust conclusions [38].

Patients with atherosclerosis should be aggressively treated for secondary prevention of cardiovascular disease. These modalities include aspirin, statins, blood pressure control, cessation of smoking, and, in patients with diabetes, glycemic control. Medical therapy with antihypertensive drugs, particularly ACE inhibitors or angiotensin II receptor blockers (ARBs), can effectively control the blood pressure in most patients with bilateral renal artery stenosis [39]. Although now uncommon, hypertension can be resistant to antihypertensive therapy; such patients may be candidates for revascularization. In addition to issues related to blood pressure control and progressive renal artery atherosclerosis, these patients are also at risk for extrarenal cardiovascular events.

IV. Revascularization

a) Possible indications for intervention

Renal revascularization with surgery or percutaneous techniques may be considered in the following settings [40-43]:

- Severe or refractory hypertension
- Recurrent episodes of flash pulmonary edema
- Possibly, otherwise unexplained progressive renal insufficiency
- An inability to maintain renal function as the systemic blood pressure is lowered, even with medical therapies other than angiotensin inhibition

It has been suggested that stable renal insufficiency in the presence of marked bilateral stenoses is an indication for intervention. However, intervention in the absence of the above indications, such as bilateral significant renovascular disease (or unilateral disease in a single viable kidney) as an incidental finding during coronary angiography, is not recommended [36].

By comparison, variable results relating to renal function outcomes are observed after either surgery or percutaneous interventions. This is an important issue. The observations cited above that progressive renal artery stenosis is common on repeat angiography or Doppler ultrasonography and may be associated with an elevation in serum creatinine does not necessarily mean that intervention for reasons other than the above indications will improve outcomes. Many such patients remain stable with medical therapy alone [44].

When considering revascularization in chronic ischemic renovascular disease, the ability to identify patients likely to benefit in terms of renal outcomes remains difficult. Prolonged renal ischemia can lead to renal atrophy that is characterized histologically by tubular loss and a chronic interstitial nephritis [45-46]. Although nonspecific, an elevated serum creatinine concentration suggests the presence of these irreversible processes.

Older studies suggested that clinically significant functional recovery can be achieved with revascularization if filling of the distal renal arterial tree is seen (thereby allowing bypass to be performed) and if one or more of the following criteria is present [47]:

- Visualization of the collecting system either on an intravenous pyelogram or during the pyelogram phase after renal arteriography.
- Kidney length ≥9 cm.
- The presence of intact glomeruli on frozen section biopsy obtained at the time of surgery.
- Presence of high resistive index.

b) Summary

All patients with atherosclerotic renovascular disease should be treated with risk factor reduction according to current guidelines for secondary prevention of cardiovascular disease.

c) Management

Atherosclerotic renal artery lesions may remain stable or progress over time to greater degrees of stenosis at widely varying rates. There is no consensus about the exact approach and the optimal time to intervene since clinical trial data are limited.

The relative efficacy of surgery and angioplasty with stent placement have not been compared in a randomized trial. However, surgery is associated with an appreciable rate of in-hospital mortality (about 10 percent in a national review in the United States) [48]. As a result, the revascularization procedure of choice in most centers is percutaneous angioplasty with stent implantation [49-52]. This recommendation is based upon clinical experience and the success of stenting in coronary lesions.

When intervention is performed, surgery was particularly recommended in the 2005 ACC/AHA guidelines in patients with multiple small renal arteries, early primary branching of the main renal artery, or require aortic reconstruction near the renal arteries for other indications (eg, aneurysm repair or severe aortoiliac occlusive disease) [36].

V. Renal Atheroemboli

Renal and systemic atheroemboli (also called cholesterol crystal emboli) usually affect older patients with diffuse erosive atherosclerosis. Cholesterol crystal embolization occurs when portions of an atherosclerotic plaque break off and embolize distally, resulting in partial or total occlusion of multiple small arteries (or glomerular arterioles), leading to tissue or organ ischemia [53].

a) Risk Factors

Atheroembolization is a complication of severe atherosclerosis. Thus, risk factors for atheroembolic disease, such as older age, male sex, diabetes, arterial hypertension, hypercholesterolemia, and cigarette smoking, are the same as for the development of atherosclerosis [54-60].

i. *Inciting events*

Once formed, an atherosclerotic plaque may be disrupted by a variety of inciting events, producing cholesterol crystal emboli. These inciting events can be classified broadly into the following :

- Iatrogenic event, usually induced by angiography, cardiovascular surgery, or anticoagulation
- Spontaneous event, induced by hemodynamic stress

Cholesterol crystal embolization is iatrogenic in more than 70 percent of cases [61-62]. It is often seen following manipulation of the aorta or other large arteries during angiography, angioplasty, or cardiovascular surgery. Mechanical aortic trauma, induced by radiological catheters or vessel manipulation/clamping, causing plaque disruption, has a key role [46-48]. Angiography is the most common triggering event, accounting for as many as 80 percent of iatrogenic cases [63-66]. The incidence of clinically apparent atheroemboli after angiography has not been well defined.

It has also been suggested that treatment with warfarin, heparin, or thrombolytic agents may cause atheroemboli, perhaps because anticoagulation may interfere with the healing of ulcerated atheromatous plaques [67-68]. However, anticoagulant-associated atheroembolism is uncommon, even in patients with severe aortic plaque (0.7 to 1 percent) [69-70]. In addition, most patients with atheroemboli associated with anticoagulation have a second potential trigger, usually recent angiography. Anticoagulation is the sole inciting event in only 7 percent of such patients [48].

Hemodynamic stress leading to spontaneous embolization was the most common form in historical reports [71-74]. However, as noted, most cases are now related to iatrogenic triggers.

b) Clinical Presentation

Cholesterol crystal embolization to the kidney typically produces a subacute kidney injury observed several weeks or more after a possible inciting event. Severe hypertension may also be present. Less commonly, acute kidney injury occurring within one to two weeks after the inciting event may be seen, usually in association with massive embolization. Patients with renal atheroemboli are typically older (mean age 71 to 72 years in two large series) ,have a bland urine sediment [75-76], and have may have peripheral eosinophilia].

However, kidney injury due to atheroemboli is not the most common presentation; rather, it is often found after the patient has presented in some other way.

This is likely because, when it occurs, atheroembolism is ubiquitous, affecting varied vascular distributions. Thus, renal disease from atheroembolism is part of a multisystem disorder. The clinical presentation is more frequently related to atheroembolization of the skin (producing "blue toe syndrome") or livedo reticularis), mesentery (producing intestinal ischemia, gastrointestinal bleeding, or pancreatitis), and/or central nervous system (producing transient ischemic attack, confusion, or visual symptoms). Presenting symptoms may also be subtle and nonspecific, such as fever, myalgias, headache, and weight loss. In addition, patients at risk for atheroembolism are not routinely monitored for worsening kidney function.

Atheroembolism is not uncommon as a cause of acute kidney injury in elderly patients. This was illustrated in a series of 259 patients over the age of 60 years who underwent renal biopsy for acute kidney injury; 7 percent had atheroembolic disease [77].

The renal manifestations of atheroembolic disease are usually different from those seen with clot emboli. Clot emboli primarily occur in patients with atrial arrhythmias or a prior myocardial infarction. They tend to produce complete arterial occlusion and renal infarction, leading to flank pain, hematuria, and an elevated lactate dehydrogenase with relatively normal transaminases [78].

By comparison, atheroemboli are typically nondistensible and irregularly shaped; as a result, they tend to produce incomplete occlusion with secondary ischemic atrophy rather than renal infarction With time, a foreign body reaction often ensues, causing intimal proliferation, giant cell formation, and further narrowing of the vascular lumen. This reaction presumably contributes to the progressive decline in renal function that often occurs for three to eight weeks after the procedure.

c) Urinary findings

The urinalysis in patients with renal atheroemboli is typically benign with few cells or casts, a finding consistent with ischemic atrophy [79-80]. Proteinuria is usually not a prominent feature, except in patients with underlying diabetic nephropathy; however, nephrotic-range proteinuria (as high as 11 g/day) has been rarely reported [78]. Some patients have an active urinary sediment, including hematuria and, rarely, red cell casts. In this setting, an acute glomerulonephritis or vasculitis may be suspected, particularly if there are extrarenal manifestations.

Eosinophiluria also may be seen if the urine sediment is examined with Hansel's stain soon after the renal atheroemboli [79].

i. *Eosinophilia and hypocomplementemia*

Two other abnormalities that commonly occur during the acute phase are eosinophilia and hypocomplementemia; these changes may reflect immunologic activation at the surface of the exposed atheroemboli [80-83].

ii. *Evaluation and Diagnosis*

The diagnosis of renal atheroemboli requires a high index of suspicion and knowledge of the associated risk factors. A clinical diagnosis can be made when a potential inciting event (usually angiography) is followed by the delayed onset of kidney injury (typically several weeks or longer rather than hours or days), particularly when there are signs of extrarenal atheroemboli. Renal biopsy is regarded as the definitive method for diagnosis. Alternatively, biopsy of a skin lesion (if present) is a simple, minimally invasive procedure with a high diagnostic yield. Less commonly, histological confirmation may be made in other organs, such as the gastrointestinal track.

Conversely, renal biopsy is crucial for diagnosis of cases with a chronic, smoldering presentation of renal atheroembolization. A tissue sample is also required to make a definitive diagnosis in patients presenting with a spontaneous (rather than iatrogenic) form of the disorder.

d) Treatment And Prognosis

There is no specific therapy for atheroembolic renal disease. Therapeutic modalities are mostly preventive and supportive. These modalities include statins, aspirin, blood pressure control, cessation of smoking, and, in patients with diabetes, glycemic control.In patients with atheroembolic disease, secondary prevention relies upon removal of the causes of atheroembolism and prevention of new showers of atheroemboli. Consideration should be given in affected patients to withdrawal of anticoagulation and avoidance or postponement of new radiologic and/or vascular surgery procedures, if possible. Observational studies suggest that statin use may be associated with better outcomes [82,83]. A potential benefit of low-dose steroids has been reported in retrospective series [69], but this finding was not confirmed in a prospective study [82].

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Autoamputated Appendix: A Case Report

By Bircan SAVRAN, Ahmet KOÇAK, Bekir ŞANAL & Yasin Tuğrul KARAKUŞ
Dumlupınar University, India

Introduction-

a) Aim

To discuss the condition of a child patient with abdominal pain related to autoamputated appendix.

b) Case Report

A male patient at 12 has admitted to our clinic with abdominal pain and vomiting complaints lasting for two days. His white blood cell (WBC) count was 9,100 and C-reactive protein (CRP) level was 27,89. Although direct radiographs have reflected normal structure, there was a diffuse thickening on ileum and there was a peripheral fluid collection surrounding the caecal walls. The patient was hospitalized. His abdominal pain has temporarily relieved but, he has undergone surgical intervention as his abdominal pain has exacerbatively recurred at the end of day one. During intraoperative exploration, we have observed that the appendix was totally seperated from caecum and its mesenteric perfusion was partially deteriorated (Fig. 1). Appendectomy operation was performed without caecal suturation (Fig. 2) and our patient was discharged from hospital two days after the operation with total remission.

GJMR-I Classification: NLMC Code: WI 535

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Autoamputated Appendix: A Case Report

Bircan SAVRAN [α], Ahmet KOÇAK [σ], Bekir ŞANAL [ρ] & Yasin Tuğrul KARAKUŞ [ω]

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Autoamputated Appendix – Figure Legends

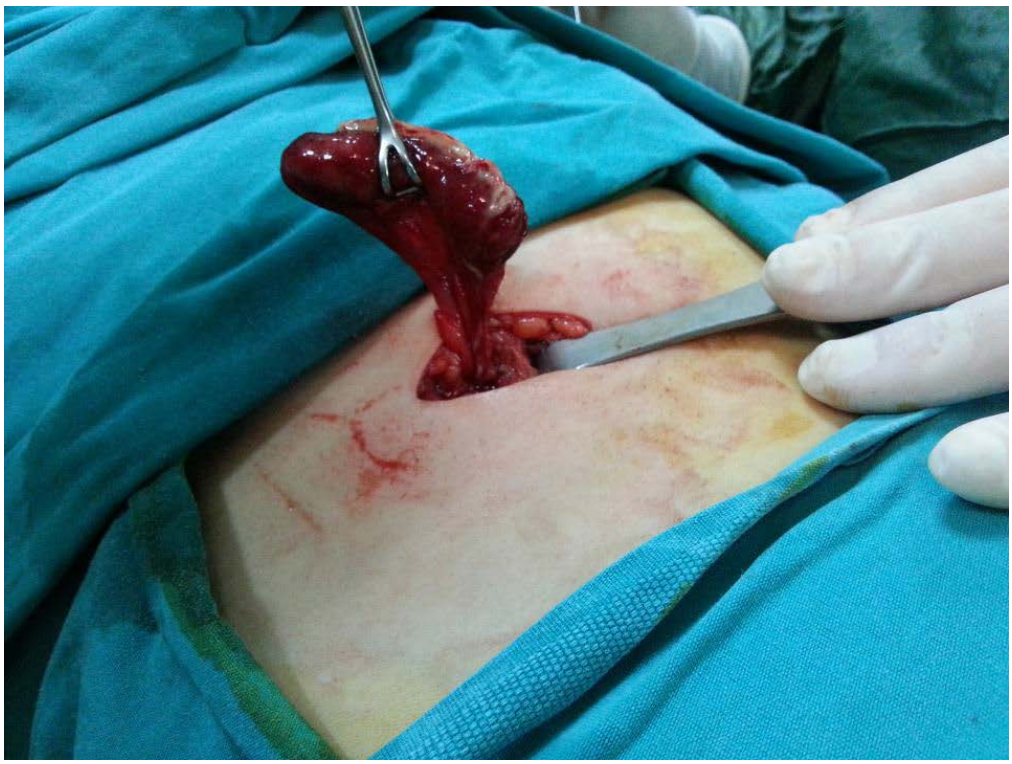

Figure 1 : Excised autoamputated appendix

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Author ω: Dumlupınar University Faculty of Medicine, Department of Pediatrics, Kutahya, Turkey.

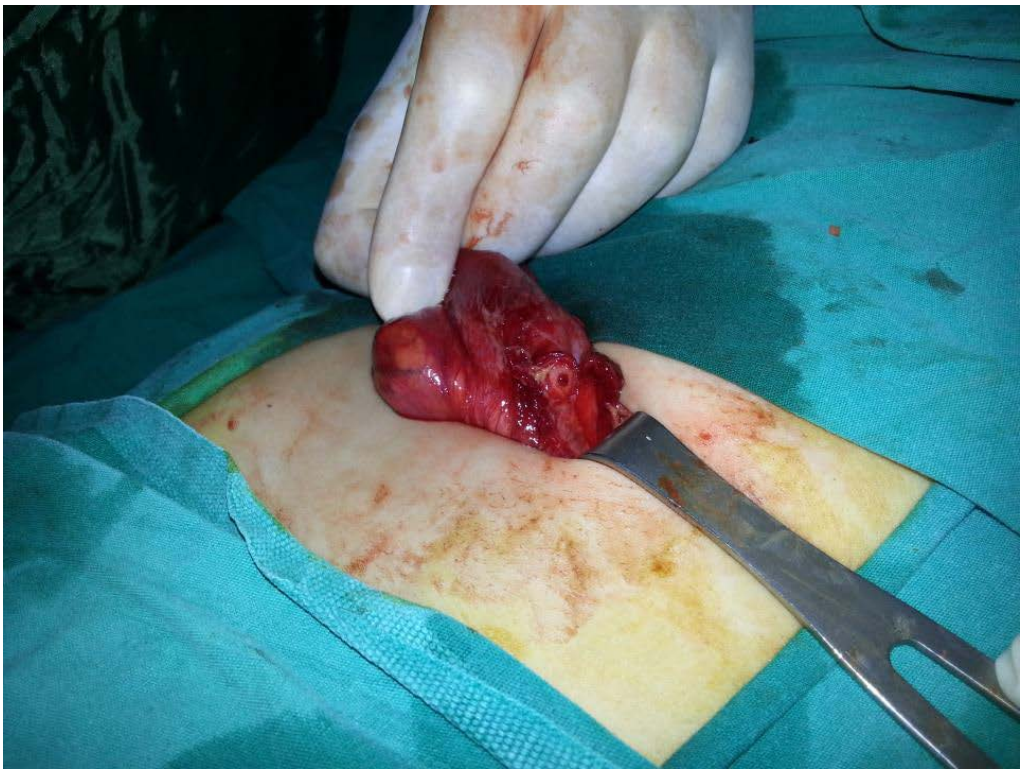

Figure 2 : No defect sign was observed on cecal junction site of the autoamputated appendix

II. Discussion

Appendix is derived from midgut and first appears during the 8th week of the embryonic development as an outpouching of the cecum and consequentally rotates to medial position with gut rotation.[1] The mean length of the appendix is between 8-10 cm. Congenital absent appendix is a very rare condition so that even many very experienced surgeons have not encountered. Pester has reported few cases with absent appendix.[2] If the lower cecal segment do not undergo a thinning process, this may lead to total hypoplasia or absence of the appendix.[3] There are only a few cases in the literature reporting absence of appendix.[4] It is considered that the absence of appendix is associated with autoamputation. However, there is no such case which exhibits appendix autoamputation during surgical intervention so far. Thus, the current case represents the first autoamputated appendix case during surgical intervention. It may be strongly possible that perfusional disorders around the autoamputated appendix could give rise to a necrotic seperation of the appendix from cecum by time, because we have observed that appendicial tissue has an ischemic appearance with changed color to dark purple/black.

III. Conclusion

It is noteworthy that appendix autoamputation was intraoperatively observed in this case. Our case may contribute to more clearly reveal the underlying ethiopathogenesis in absent appendix.

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"Double Time" Surgical Technique for Treatment of Pilonidalis Cyst: First Results

By Dioscoridi Lorenzo, Giampaolo Perri & Carassale Gianluca
University of Florence, Italy

Abstract- There are many surgical operations for the treatment of pilonidalis cyst. The results are controversial and surgical infections as recurrences are common complications.

We suggest a new surgical technique consists in two operating times: the first ("dirty") of cyst exeresis and the second ("clean") of direct suture.

The first results on 82 patients show only 7.3% of wound opening, 1.2% of surgical infections and no recurrence s. More studies are needed to verify this first results.

Keywords: pilonidal cyst, surgical treatment of pilonidal cyst, sinus pilonidalis.

GJMR-I Classification: NLMC Code: WJ 768

Strictly as per the compliance and regulations of:

"Double Time" Surgical Technique for Treatment of Pilonidalis Cyst: First Results

Dioscoridi Lorenzo [α], Giampaolo Perri [σ] & Carassale Gianluca [ρ]

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I. Background

Pilonidal sinus (PS) is a common, chronic, benign disease of young adulthood that is encountered more commonly in males than in females. PS is not a major surgical challenge. However, considering the gender and age group it mainly affects, it is a serious condition that can cause significant loss of work and school in every community. The objectives for treating PS disease are minimal tissue loss, minimal postoperative morbidity, rapid return to daily activities and work, acceptable cosmetic results, minimal recurrence rate, and low cost. Although many surgical and nonsurgical techniques have been reported, no ideal treatment that provides all of these positive results is known.

II. Materials and Methods

We perform the operation in spinal anaesthesia or local anaestehesia only if the cyst is not complicated. Our surgical technique consists in two times:

1. Cyst excision
2. Suture of the wound

For the moment 1 (Fig.1), we create a first surgical field, and the instrumentalist prepares a specill, a syring containing methylene blue with atraumatic needle, two surgical clamps, two Kocher clamps, normal incisor and electric coagulator. The phases are:

- Disinfection of the skin and preparation of surgical field in the area around the cyst
- Research of eventual fistulas and studying of the cyst with the specill
- Injection of 0,2-0,5 cc of methylene blue
- Incision of the skin and dermis with cutting incisor around the cyst.
- Completing the incision till the presacral fascia, taking away all the cyst with at least 0,5 cm margin from the cyst.
- Disinfection of the wound
- For the moment 2 (Fig.2), the instrumentalist prepares a gloves change for all the operators and all the necessary for hemostasis and suture. The phases are:
- Hemostasis
- Preparation of the margins of the wound to create a tension-free suture
- Closure with assorbable suture (passing trought subcutaneous tissue, presacral fascia, subcutane ous tissue) with 1 cm distance from point to point.
- Suture of the skin with non-adsorbable Donati's sutures beginning from the upper part of the wound and finishing with the stich near to perianal region.
- Compressive medication.

The operation is performed in one-day surgery course and the day after the patient goes home. The indications for postoperative course are:

- Removal of the compressive medication at day one.
- Every-day cleansing of the wound with medicated soap and steridrol
- No fixed medication, only everyday-changed dressings on the wound
- Medication at day five
- Removal of sutures between day twelve and day fifteen

We don't reccommend any other treatment.

Author α σ ρ: Department of Surgery and Translational Medicine, University of Florence, Italy. e-mail: giamperri@hotmail.it

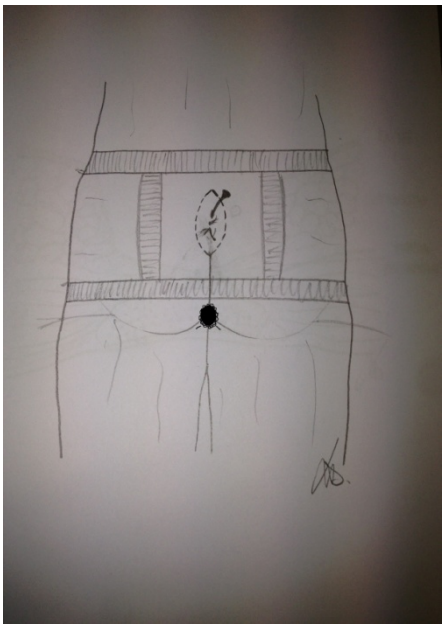

Figure 1

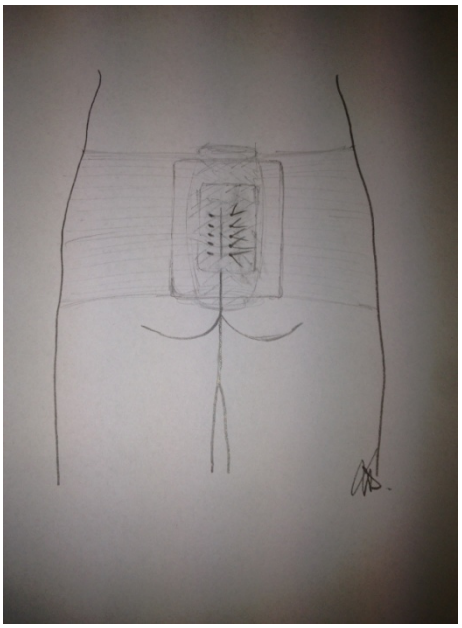

Figure 2

III. Results

We have treated 82 patients (68 males, 14 females, median age: 17y.o.).Follow-up lasts 6 months. Only 6 patients (7,3%; all males) presented with partial deiscence of the suture and need re-opening of the wound and healing for second intention. Another patient presents a mild infection of the wound, solved by medications. No recurrences were observed in this patients.

IV. Discussion

This technique has found on two bases: the first is to avoid intraoperative contamination, the second to reduce bacterial postoperative colonization.

Intraoperative contamination is the cause of postoperative infection and re-opening of the wound: with this technique, we don't use the same instruments that we have used for cyst asportation.

Considering recurrences, We think that the main reason for that is the incomplete exeresis of the cyst: so, we always search for presacral fascia, and eventually, other areas coloured with methylene blue.

We suggest to use always specill and methylene blue in order to have a whole overview of the pathology and to perform the most radical exeresis.

Furthermore, this technique is tension-free and it is important in order to avoid deiscence of the suture due to excessive tension of the margins.

Fixed medications in this area just let bacteria to grow on that causing infections, so, in this method, the medication are changed every day and the bacterial load is reduced using disinfecting soap and steridrol.

V. Conclusion

The described technique is safe and simple to learn, but it needs the active cooperation of the patient in postoperative course with the advantage of low rate of wound opening, infection and recurrence. Further studies are needed to confirm the results.

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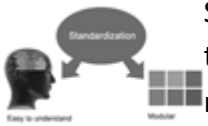

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The recommended size of original research paper is less than seven thousand words, review papers fewer than seven thousands words also.Preparation of research paper or how to write research paper, are major hurdle, while writing manuscript. The research articles and research letters should be fewer than three thousand words, the structure original research paper; sometime review paper should be as follows:

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(c) Up to ten keywords, that precisely identifies the paper's subject, purpose, and focus.

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(e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition; sources of information must be given and numerical methods must be specified by reference, unless non-standard.

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A major linchpin in research work for the writing research paper is the keyword search, which one will employ to find both library and Internet resources.

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Search engines for most searches, use Boolean searching, which is somewhat different from Internet searches. The Boolean search uses "operators," words (and, or, not, and near) that enable you to expand or narrow your affords. Tips for research paper while preparing research paper are very helpful guideline of research paper.

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- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

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Acknowledgements: Please make these as concise as possible.

References

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21. Arrangement of information: Each section of the main body should start with an opening sentence and there should be a changeover at the end of the section. Give only valid and powerful arguments to your topic. You may also maintain your arguments with records.

22. Never start in last minute: Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

23. Multitasking in research is not good: Doing several things at the same time proves bad habit in case of research activity. Research is an area, where everything has a particular time slot. Divide your research work in parts and do particular part in particular time slot.

24. Never copy others' work: Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

25. Take proper rest and food: No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

26. Go for seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

27. Refresh your mind after intervals: Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

28. Make colleagues: Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

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30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

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33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

34. After conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print to the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects in your research.

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- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

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· Use past tense to describe specific results

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The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript--must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

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- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
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- Significant conclusions or questions that track from the research(es)

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- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

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- Shape the theory/purpose specifically - do not take a broad view.
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- Explain materials individually only if the study is so complex that it saves liberty this way.
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- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

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- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

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- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

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- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

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The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.

Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.

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Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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