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SURGERIES AND CARDIOVASCULAR SYSTEM



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Preoperative Embolization of the Splenic and Left Gastric Arteries Does Not Seem to Decrease the Rate of Anastomotic Leaks after Esophagogastroctomy

By Emma Eizaguirre Letamendia, José Ignacio Asensio Gallego, Santiago Larburu Echaniz, Javier Murgoitio Lazaro, Igor Novo Sukia, Francisco Loyola Echaniz & José María Enriquez Navascués

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Abstract- Introduction: Embolization of the gastric and splenic artery is performed to improve blood flow to the constructed gastric tube during esophagectomy and thus reduce the rate of anastomotic leaks for this type of surgery.

Patients and Methods: This is a retrospective, comparative study conducted from 2003 to 2013 of 32 patients undergoing preoperative embolization versus 102 patients not undergoing embolization to assess the impact of this technique on the rate of anastomotic leakage. The variables considered were age, gender, comorbidities, preoperative histopathology, location of the tumor, type of neoadjuvant therapy (if appropriate), type of surgery and type of anastomosis.

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Preoperative Embolization of the Splenic and Left Gastric Arteries Does Not Seem to Decrease the Rate of Anastomotic Leaks after Esophagogastroctomy

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Results: Patients had similar epidemiological and pathologic characteristics, except for the neoadjuvant treatment received. Of the 32 patients having embolization, 28 (87.5%) received chemoradiotherapy preoperatively, whereas only 52 of the 102 (50%) patients not having embolization received this therapy ($p=0.0001$). Of the 32 patients undergoing embolization, 14 (43.75%) developed an anastomotic leak versus 33 (32.35%) of the 102 patients not having embolization. No statistically significant differences were observed ($p=0.289$).

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Conclusions: Although ischemic conditioning of the constructed gastric tube by embolization of the left gastric artery and splenic artery prior to esophagectomy is a safe approach unrelated with morbidity, we could not demonstrate that it reduces the rate of anastomotic leaks.

I. INTRODUCTION

Anastomotic leakage after esophagectomy is a complication varying in severity that may increase morbidity and mortality in patients depending on the location of the anastomosis (thoracic or cervical). The incidence of anastomotic leaks ranges from 3% to 25%, especially for cervical esophagogastric anastomoses ^{1,2,3,4}.

Esophageal anastomotic leakage is defined as the extravasation of gastric/esophageal luminal contents. Bacterial contamination may cause local abscess, fistula, anastomotic dehiscence, surgical wound dehiscence, sepsis and even death.

Esophagogastric anastomosis may be caused by patient's status (malnutrition, immunosuppression...) and/or the surgical technique employed (insufficient perfusion of the constructed gastric tube, location of the anastomosis, tense anastomosis...)⁵.

Embolization of the left gastric artery before esophagectomy has been reported to improve ischemia in the constructed gastric tube during anastomosis.

The objective of this study was to assess the rate of anastomotic leakage in patients undergoing embolization prior to esophagectomy versus that of patients not undergoing preoperative embolization.

II. PATIENTS AND METHODS

This is a retrospective, observational study of a cohort of patients undergoing esophagectomy either for a malign or benign condition referred to the Esophagogastric Surgery Unit of a third-level hospital between June 2003 and December 2013. All patients were examined preoperatively by a multidisciplinary board. Data were prospectively collected in a database.

We compared the rate of anastomotic leaks in patients undergoing embolization of the left gastric

artery and splenic artery before esophagectomy with that of patients not undergoing preoperative embolization. The following variables were retrospectively analyzed: age, gender, comorbidities, tumor location, administration and type of neoadjuvant treatment, type of surgery, histology of the resected tissue, postoperative complications including type of anastomotic leakage and management of the leak.

Embolization was performed by interventional radiologists three weeks before surgery. Under local anesthesia, the femoral right artery was punctured. Embolization of the splenic artery was performed using a 8mm-Amplatzer®, whereas the left gastric artery was embolized using coils (Figure 1).

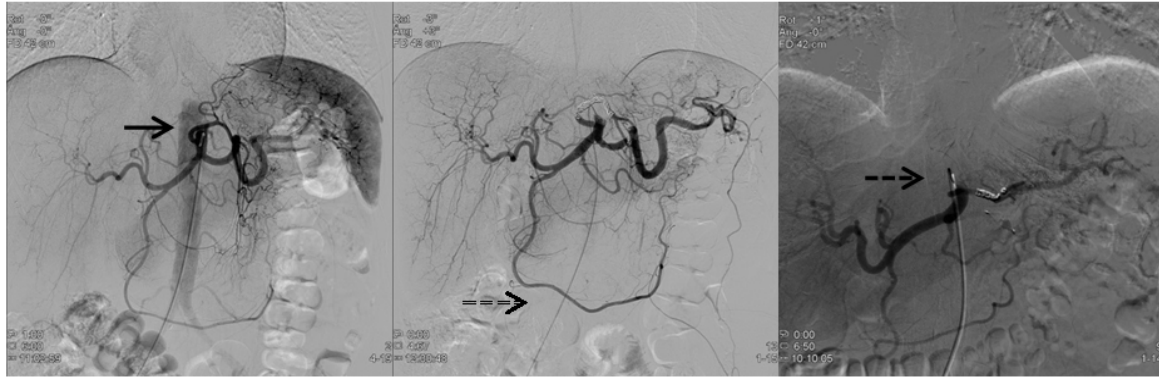


Figure 1 : Embolization of the splenic and left gastric arteries. Arrow 1 (→), splenic and left gastric arteries before the embolization; arrow 2 (= →), right gastroepiploic artery; arrow 3 (- →) embolization of the splenic and left gastric arteries.

Water-soluble contrast studies were performed on all patients for anastomotic leakage on postoperative day 7 before oral feeding was initiated.

Anastomotic leakage can be detected on X-ray scans and manifest either clinically or biologically in

blood tests. When a leak was detected, we used a classification system based on clinical, radiological and endoscopic findings. Then, the protocol established and previously published for the management of anastomotic leaks was implemented.⁶ (Figure 2).

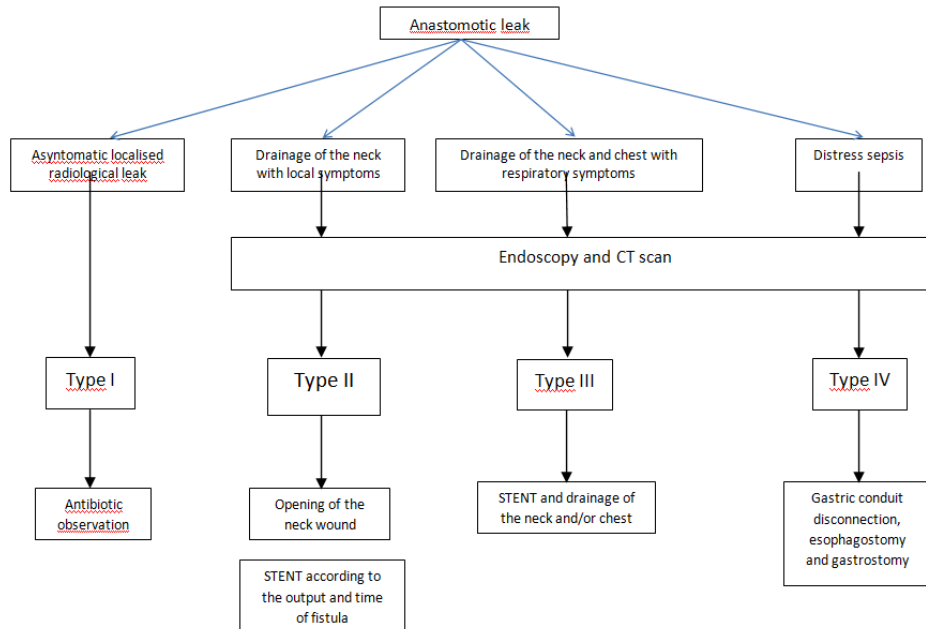


Figure 2 : Management and classification of anastomotic leaks according to clinical, radiological and endoscopic findings.

III. STATISTICAL ANALYSIS

Statistical analysis was performed using SPSS software. Fisher's test was used for comparison of qualitative data, χ^2 for comparison of ≥ 2 categorical

data and the Mann-Whitney U test for continuous variables. A value of $p \leq 0.05$ was considered statistically significant.

IV. RESULTS

A total of 138 patients with esophageal cancer and 4 patients with benign lesions requiring esophagectomy were recorded in the database during the study period. Of the 138 patients registered, 121 were male and 19 were female, with an average age of 60 years.

Figure 3 shows the process of inclusion and exclusion for embolization candidates. Of a total of 142 patients, 108 did not undergo preoperative embolization, whereas 34 underwent embolization of the left gastric artery and splenic artery before esophagectomy.

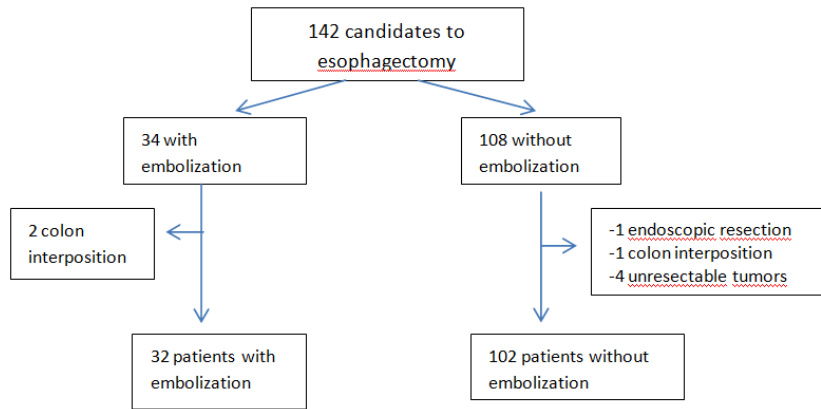


Figure 3 : Included and excluded patients.

Of the patients undergoing embolization, two underwent coloplasty, in one due to the absence of the right gastro-omental artery and in the other case because his tumor at the distal esophagus extended more than 7cm to the stomach and the gastric tube could not be constructed with sufficient tumor-free margins. Finally, a total of 32 patients undergoing embolization were included in the study. As to the 108 patients without embolization, one was candidate to coloplasty for esophageal necrosis and partial gastric necrosis caused by caustic ingestion. In other case, the patient underwent endoscopic resection because the

tumor was located at the mucous membrane and the patient presented substantial comorbidities. Four patients had an unresectable tumor. Finally, 102 patients undergoing esophagectomy without preoperative embolization and developing esophageal and gastric anastomosis were included in the study.

Therefore, of the 134 candidates to esophagectomy, 32 (23.8%) underwent embolization and 102 (76.2%) had no embolization. Table I shows demographics and comorbidities. No statistically significant differences were found between patients undergoing embolization and patients not undergoing embolization.

Table I : Demographics and comorbidities.

	WITH EMBOLIZATION (n=32)	WITHOUT EMBOLIZATION (n=102)	p-value
AGE (YEARS)	61 (46-75)	59.95 (29-88)	0.603
Gender			
Female	5 (15%)	14 (13.7%)	0.982
Male	27 (85%)	88 (86.2%)	
Comorbidities			
Smoker	13 (40%)	37 (36.3%)	0.679
Drinker	0	13(12.6%)	0.065
Heart Disease	13 (40.6%)	39 (38.23%)	0.837
COPD	6 (18.7%)	14 (13.7%)	0.570
Obesity	2 (6.2%)	1 (0.98%)	0.141
Diabetes	1 (3.1%)	9 (8.8%)	0.450
Chronic liver disease	1 (3.1%)	4(3.9%)	1.000

Table II shows the histopathological findings following esophagectomy and the location of the esophageal tumors. No statistically significant differences were found between patients undergoing embolization and patients not having embolization.

Table II : Tumor Histopathology and Location.

	WITH EMBOLIZATION (n=32)	WITHOUT EMBOLIZATION (n=102)	p-value
HISTOPATHOLOGY			
Adenocarcinoma	16 (50%)	48 (47.05%)	0.684
Ca. Epidermoid	16 (50%)	47(46.07%)	0.676
Ca. Neuroendocrine	0	1 (0.98%)	-
GIST	0	3 (2.94%)	-
Other (achalasia, necrosis, peptic stricture)	0	3(2.94%)	-
LOCATION			
Proximal esophagus	9 (28.1%)	21 (20.58%)	0,267
Mediastinal esophagus	14 (13.7%)	60 (58.82%)	
Distal esophagus	9 (28.1%)	18 (17.64%)	

Table III shows the preoperative treatment administered and the type of surgery performed. Of the 32 patients undergoing embolization, 28 (87.5%) received chemoradiotherapy preoperatively, whereas 52 of the 102 (50.9%) patients without embolization

received chemoradiotherapy preoperatively (p=0.0001). Statistically significant differences were found between the embolization group and the no-embolization group (p=0.0001).

Table III : Preoperative Treatment and Type of Surgery.

	WITH EMBOLIZATION (n=32)	WITHOUT EMBOLIZATION (n=102)	p-value
PREOPERATIVE CHEMOHERAPY/RADIATION THERAPY			
No	4 (12.5%)	50 (49.1%)	0.0001
Yes	28 (87.5%)	52 (50.9%)	
SURGERY			
Ivor-Lewis	10 (31.25%)	37 (36.2%)	0.693
Transhiatal esophagectomy	3 (9.37%)	13 (12.74%)	
Three-stage esophagectomy	19 (59.37%)	52 (50.9%)	
Minimally invasive esophagectomy	30 (93.75%)	93 (91.17%)	1
LOCATION OF THE ANASTOMOSIS			
Cervical	21(65.62%)	65(63.7%)	0.586
Thoracic	11(34.38%)	37(36.3%)	

As regards the type of surgery, no statistically significant differences were found between patients undergoing embolization and patients not undergoing embolization. Minimally invasive esophagectomy was performed in 30 (93.75%) of the patients with embolization and in 93 (91.17%) of the patients without embolization. As to the location of the anastomosis (cervical vs thoracic), no statistically significant differences were observed (p=0.586).

found between the two groups concerning the incidence of the most severe anastomotic leaks (type III and IV) (p= 0.087). (See Table IV).

As many as 14 patients (43.75%) undergoing embolization developed anastomotic leaks, of which 6 (18.75%) were detected on X-ray scans or due to mild symptomatology. Eight leaks manifested clinically. As to the patients without embolization, 33 (32.35%) developed anastomotic leakage, of which 12 (11.7%) had clinical symptoms. As regards the development of anastomotic leakage, no statistically significant differences were found between the two groups (p=0.289). No statistically significant differences were

Table IV : Postoperative Complications and Mortality.

	WITH EMBOLIZATION (n=32)	WITHOUT EMBOLIZATION (n=102)	p-value
ANASTOMOTIC LEAKS	14 (43.75%)	33 (32.35%)	0.289
Type I	2 (6.25%)	11 (10.78%)	
Type II	4 (12.5%)	10 (9.8%)	
Type III	6 (18.75%)	10 (9.8%)	
Type IV	2 (6.25%)	2 (1.9%)	
III-IV leaks	8 (25%)	12 (11.7%)	0.087
Stricture	14 (13.7%)	4 (3.92%)	0.628
Deaths (<30 postoperative days)	3 (9.37%)	10 (9.8%)	1

No complications were associated with embolization. Regarding long-term complications, two (6.25%) of the patients with embolization and four (3.92%) of the patients without embolization developed anastomotic stricture formation. Three (9.37%) patients with embolization died soon after surgery (one died of pneumony and two of anastomotic leakage); ten (9.8%) patients without embolization died (four died of anastomotic leakage, one of liver failure caused by existing cirrhosis, one of heart failure and four of respiratory complications). (See Table IV).

V. DISCUSSION

This non-randomized retrospective study revealed that no statistically significant differences exist concerning anastomotic leak rates between patients undergoing embolization and patients not undergoing embolization before esophagectomy.

Anastomotic leakage is a severe complication of esophageal surgery. The incidence of this complication ranges between 10 and 25%^{7,8} and may increase mortality rates up to 50%⁹. Anastomotic leakage is defined as a leak of luminal contents from a surgical join between two hollow viscera¹⁰. The escape of luminal contents may cause local abscess, fistula, sepsis or death.

Variations in reported rates of esophageal anastomotic leaks may be due to the different definitions used to classify this complication and its location; this also has an impact on therapeutic algorithms^{7,11,12}. With regard to the physiopathogeny of anastomotic esophagogastric dehiscences Turkyilmaz et al.⁷ defined four types according to the triggering factors; thus dehiscences may be caused : a) by a systemic disease; b) by the intrinsic anatomy of the esophagus; c) by the technical factors of the surgery; d) by postoperative care and complications.

As to the classification of esophagogastric anastomotic fistulae, like Lerut et al¹¹, we classify them according to their clinical impact as assessed through clinical, radiological and endoscopic examination and to the therapy required⁶.

The gastric flow has been proven to decrease both in animals and humans by more than 70% after

resection of the left gastric artery, the short vessels and their veins, which is required to rise the constructed gastric tube^{13,14,15}. The decrease in gastric flow results in ischemia.

Different authors have described a variety of techniques for improving blood flow and venous drainage in esophagogastric anastomosis and reduce the rate of anastomotic leakage and its severe effects, with different outcomes^{16,17,18}.

To improve microvascularization in the reconstructed gastric tube through ischemic conditioning of the stomach, Akiyama et al¹⁹ described the technique of embolization of the left gastric artery and splenic artery through the femoral artery 12 days prior to the esophagectomy. Although Akiyama did not report statistically significant differences in anastomotic leak rates, he demonstrated that vascularization of the reconstructed gastric tube at the moment of esophagogastric anastomosis improved in patients undergoing embolization. Diana et al²⁰ did not found statistically significant differences either between patients with embolization and patients without embolization. However, they observed that patients undergoing embolization were more likely to develop esophagogastric stricture (32% vs 3%).

Similarly, transient bloodletting of the short gastric vein seems to be an efficient mechanism for conditioning microcirculation, which improves the circulation of the oral side of the gastric tube during esophagectomy¹⁷. However, outcomes have not been reported.

A different method to improve microcirculation is performing delayed conditioning by two-stage esophageal surgery^{21,22,23} (the gastric tube is reconstructed in the first stage and esophagectomy is performed some days later in a second stage).

Yoshimi et al¹⁶ revascularized the gastric tube using the splenic artery and vein, external carotid artery, and internal jugular vein in 21 patients who did not develop anastomotic leakage. However, differences in anastomotic leak rates between this group and the control group were not statistically significant.

This study has several limitations. Firstly, this is not a randomized, prospective, case control study.

Secondly, the sample of patients undergoing embolization was very small, which reduced its statistical power. Third, chemoradiotherapy was administered to the two groups differently, which may affect outcomes regarding the rate of anastomotic leakage.

In conclusion, according to the results of this study, it cannot be concluded that embolization of the left gastric artery and the splenic artery before esophagectomy reduces the rate of anastomotic leaks.

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Acute Appendicitis Due to Metastasis of Prostatic Adenocarcinoma: A Case Report

By Imad El Moussaoui, Romain Diamand, Manke Dika, Augustin Limbga
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Abstract- Acute appendicitis due to metastasis of prostatic carcinoma is very rare, and only five cases of metastasis of prostatic carcinoma are described in the literature. We report the case of a 73-year-old man with a history of an adenocarcinoma of the prostate with multiple bone metastases. The patient was admitted to the emergency department with symptoms and signs of an acute appendicitis which was confirmed by computed tomography (CT). Laparoscopic surgical exploration was performed, affirming an acute appendicitis with a suspicious lesion in the appendix base. Due to the location of the lesion, an ileocecectomy was performed. Histopathological and immunohistochemical examinations of the specimen showed an extrinsic infiltration of the appendix by adenocarcinoma metastasis expressing the prostate-specific antigen (PSA). These results confirmed an acute appendicitis caused by metastasis of prostatic adenocarcinoma.

Keywords: *metastasis; prostate; appendix.*

GJMR-I Classification: *NLMC Code: WP 460*



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Acute Appendicitis Due to Metastasis of Prostatic Adenocarcinoma: A Case Report

Imad El Moussaoui ^α, Romain Diamand ^σ, Manke Dika ^ρ, Augustin Limbga ^ω & Abdelilah Mehdi [¥]

Abstract- Acute appendicitis due to metastasis of prostatic carcinoma is very rare, and only five cases of metastasis of prostatic carcinoma are described in the literature. We report the case of a 73-year-old man with a history of an adenocarcinoma of the prostate with multiple bone metastases. The patient was admitted to the emergency department with symptoms and signs of an acute appendicitis which was confirmed by computed tomography (CT). Laparoscopic surgical exploration was performed, affirming an acute appendicitis with a suspicious lesion in the appendix base. Due to the location of the lesion, an ileocecectomy was performed. Histopathological and immunohistochemical examinations of the specimen showed an extrinsic infiltration of the appendix by adenocarcinoma metastasis expressing the prostate-specific antigen (PSA). These results confirmed an acute appendicitis caused by metastasis of prostatic adenocarcinoma.

Keywords: metastasis; prostate; appendix.

I. INTRODUCTION

Acute appendicitis is one of the most common reasons for surgical abdominal interventions. Obstruction of the appendiceal lumen with fecaliths is the most common cause of appendicitis. Tumors, benign and malignant of the appendix are uncommon. Metastatic tumors inducing appendicitis are extremely rare.

To the best of our knowledge, only five other cases of appendicular metastases caused by a prostatic carcinoma have been reported, and our case is the first to visualize prostatic metastasis in an acute appendicitis and the unique case treated with ileocecectomy.

II. CASE REPORT

A 73-year-old man was admitted to the emergency department with right iliac fossa pain for 5 days without nausea, vomiting or fever. His medical history indicated a prostatic adenocarcinoma with multiple bone metastases located in spine, ribs and sternum. Six years ago, the patient underwent an ultrasound guided needle biopsy after a suspicious digital rectal examination, which yielded a poorly differentiated prostate adenocarcinoma with Gleason score of 7. A radical prostatectomy was performed with

a finding of positive regional lymph nodes, associated to doxorubicin, cyclophosphamide chemotherapy, and gonadotropin-releasing hormone therapy administration.

Physical examination revealed rebound tenderness over McBurney's point. Laboratory tests found leukopenia with a white blood count of 3,700/ μ L (normal range: 4,000 - 10,000/ μ L), an elevated C-reactive protein level to 45.5 mg/L (normal range: < 6 mg/L), and no alterations in liver tests and no other significant biological abnormalities were observed. Vital signs were normal. Clinical examination showed pain within deep palpation of the right iliac fossa with rebound tenderness, and the rest of the examination was unremarkable. Contrast-enhanced computed tomography (CT) revealed a dilated appendix with a size of 11 mm in diameter, and a diffuse infiltration of surrounding fat (Fig. 1), and multiple bone metastases are also visible.

Consequently, an urgent laparoscopic surgical exploration was performed; this exploration featured an acute appendicitis with a suspicious lesion at the appendicular base. In this case because of the suspicious lesion's location, a simple cecectomy was impossible due to the risk of stenosis at the last ileal loop. An ileocecectomy with side-to-side stapled ileocolonic anastomosis was performed after conversion to laparotomy.

The postoperative course was slow but favorable with oral feeding started on the first postoperative day. On the sixth postoperative day, the patient developed a postoperative ileus which required nasogastric decompression and parenteral nutrition for 7 days until resolution of the ileus and the resumption of enteral nutrition.

Histopathological examination showed an extrinsic infiltration of the appendix by an adenocarcinoma metastasis with surgical free margins. Immunohistochemical staining revealed that the tumor cells expressed the prostate-specific antigen (PSA) strongly.

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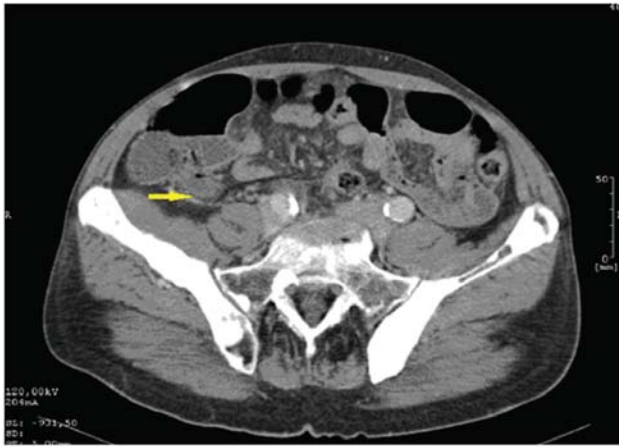


Figure 1 : Abdominal computed tomography showing distended appendix, measuring 11 mm in diameter and diffuse infiltration of surrounding fat.

These results confirmed the assumption of prostatic metastases which were suggested because of the patient's medical history.

The patient was transferred to the oncology department for further treatment.

III. DISCUSSION

Acute appendicitis is one of the most common causes of acute abdomen and one of the most common indications for surgical abdomen. It is mainly caused by an obstruction of appendiceal lumen which leads to an increase in the intraluminal pressure and luminal distention, causing a venous engorgement, arterial compromise, tissue ischemia, and bacterial growth. Continuation of this process results in appendiceal infarction as well as perforation of the appendix [1].

The obstruction is usually caused by fecaliths, and other causes are described as lymphoid hyperplasia, foreign bodies, endometriosis and parasites.

The primary tumors of the appendix are rare, occurring in only 1% of appendicectomies [2]. The acute appendicitis derived from metastases is uncommon and exceptional, as it is an incidental finding in only 0.01% of appendicectomies [3]. In recent literature review, only seven patients were found to have metastatic appendiceal cancer among 80,698 patients [4].

Metastasis to the appendix usually originates in carcinomas of the gastrointestinal tract, breast, lung or female genital tract. Only five cases of appendicular metastasis of prostate cancer are described in the literature [5-9].

The mechanism of acute appendicitis is caused by an obstruction of the lumen of the appendix by metastatic tumor. The perforation rate of an acute appendicitis within patients with metastases is 71%, whereas simple appendicitis shows a perforation rate which varies between 17% and 39% [10]. This high rate

of perforation may be explained by the effect of immunosuppression in cancer patients and the local effect of the tumor which decreases the capacity of the appendix to limit inflammation and obstruction of the lumen.

The diagnosis of an acute appendicitis derived from metastatic prostate cancer is a histopathological diagnosis using immunohistochemical staining showing tumor cells expressing PSA.

In other case reports [5-9], the appendix did not show any visible suspicious lesions and therefore only an appendectomy was performed. In spite of this, our case report is the first to visualize the metastasis during the operation and perform an ileocecal resection on acute appendicitis to metastatic carcinoma of the prostate.

With the improvement in survival of cancer patients, we will face an increase in acute appendicitis caused by metastasis.

IV. CONCLUSION

Although the tumor etiology in acute appendicitis is rare, it should be included in the differential diagnosis if an oncological patient presents symptoms and signs of an acute appendicitis.

Conflict of Interests

The authors declared that there is no conflict of interests regarding this study.

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An Endoscopic Solution when the Gastric Tube is Twisted after an Esophagectomy

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Javier Murgoitio Lazaro, Ander Timoteo Delgado, Iñaki Prieto Argárate
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Abstract- Background and aims: The twisted gastric tube after an esophagectomy can be resolved with a minimally invasive treatment avoiding a reoperation.

Methods: A 63 year old woman with tumor in the middle third of esophagus was operated on with esophagectomy and esophagogastric anastomosis in the neck. After 19days, she presented a funtional gastric tube estenosis secondary to rotation of the gastric tube.

Results: A biodegradable stent was placed endoscopically and with interventional radiologist from the second portion of the duodenum to the prestenotic area of the gastric tube, fixed with clips.

Conslusions: The biodegradable stent placement can be a possibility when a gastric tube volvulus occurs, avoiding a high risk reoperation.

GJMR-I Classification: NLMC Code: WI 310, WI 250



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An Endoscopic Solution when the Gastric Tube is Twisted after an Esophagectomy

Emma Eizaguirre Letamendia ^α, José Ignacio Asensio Gallego ^σ, Santiago Larburu Echaniz ^ρ,
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Abstract- Background and aims: The twisted gastric tube after an esophagectomy can be resolved with a minimally invasive treatment avoiding a reoperation.

Methods: A 63 year old woman with tumor in the middle third of esophagus was operated on with esophagectomy and esophagogastric anastomosis in the neck. After 19days, she presented a functional gastric tube stenosis secondary to rotation of the gastric tube.

Results: A biodegradable stent was placed endoscopically and with interventional radiologist from the second portion of the duodenum to the prestenotic area of the gastric tube, fixed with clips.

Conclusions: The biodegradable stent placement can be a possibility when a gastric tube volvulus occurs, avoiding a high risk reoperation.

I. INTRODUCTION

The esophagectomy is a complex surgery which has a high postoperative morbidity and mortality rate¹. Stenosis of the gastric tube by rotation is a rare complication with a difficult solution. The different options to resolve the stenosis range from endoscopic dilation to removing the gastric tube and performing a coloplasty two-three months later. There

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are very few cases in the literature that use a stent to resolve the gastric tube rotation. With this case we want to present a minimally invasive treatment with very low risk when this complication occurs.

II. MATERIALS AND METHODS

We report the case of a 63 year old woman with a history of type II diabetes mellitus and hypertension who had a squamous cell carcinoma (T2N0M0) in the middle third of the esophagus. According to the multidisciplinary team, the patient was operated on with minimally invasive esophagectomy (thoracoscopy, laparoscopy and cervical esophagogastric anastomosis). During the first postoperative days no complications such as bleeding or infection were found. On the 7th postoperative day, oral contrast was given and there wasn't any anastomotic leak. After starting with the progressive feeding, the patient went home on the 14th postoperative day. However, 5 days later, the patient came back to the hospital with the symptoms of postprandial fullness and vomiting. The esophagogastric study, CT and endoscopy showed a functional gastric tube stenosis secondary to rotation of the gastric tube. (Figures 1, 2 and 3). The stenosis itself was very elastic and the endoscope was passed-through easily.

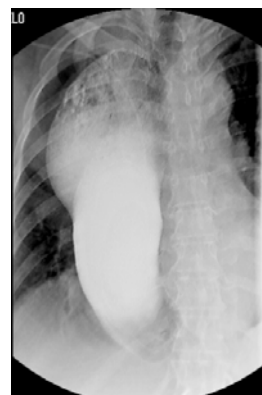


Figure 1 : Esophagogastric study with stenosis of the gastric tube.



Figure 2 : Dilation of the gastric tube due to the volvulus.



Figure 3 : Stenosis of the gastric tube by endoscopy.



Figure 4 : Stent endoscopically fixed with clips.

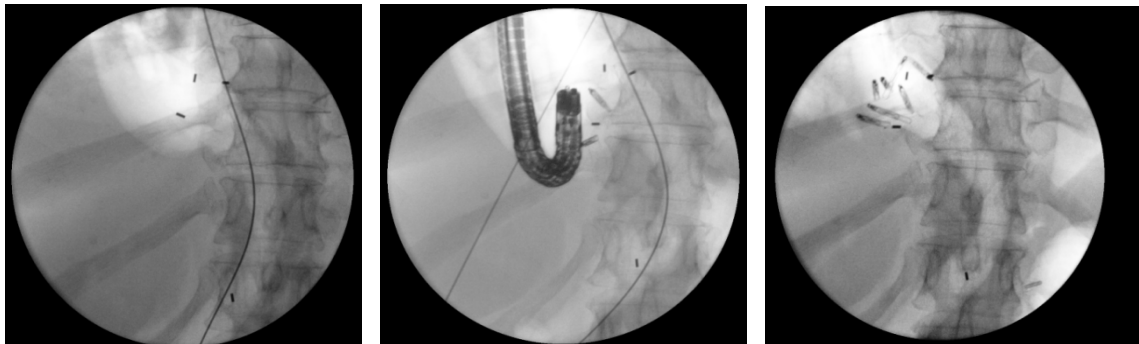


Figure 5 : The placement of the stent, both, endoscopist and interventional radiologist.

After two days of having placed the biodegradable stent, the oral contrast study was done and it showed no stenosis in the gastric tube (Figure 6).



Figure 6 : Oral contrast after stent placement.

The first option we chose was the endoscopic dilation, but after 3 attempts, it was not effective and the patient continued with intolerance to food. The second option was to place an undercover metallic stent by interventional radiologists, under general anesthetic. Initially it was effective but after 3 days, the stent migrated cranially. Finally, a 135mm length biodegradable SX-ELLA stent esophageal HV BIOMED® (ELLACS, Hradec Kralove, Czech Republic) was placed from the second portion of the duodenum to the prestenotic side of the gastric tube. This stent was endoscopically fixed with clips at its proximal portion to prevent its proximal migration (Figures 4 and 5).

The patient was discharged on the third day after placing the stent eating soft food. After 5 months of stenting, the patient is completely asymptomatic.

III. DISCUSSION

The esophagectomy presents a great postoperative morbidity and mortality rate¹. On the one hand, this is due to the general condition of the patients. Most of them have serious comorbidities (smoking, immunosuppression, malnutrition, neoadjuvant chemoradiotherapy ...). On the other hand, the surgery itself also presents high morbidity due to its aggressiveness comprising two or three approaches (abdomen, chest and / or neck). In addition, the anastomosis has a poor blood supply, it could be with tension because the

stomach is pulled up to the neck and the esophagus doesn't have a serous, which are different risks for the anastomotic leak².

The most common immediate complications of the esophagectomy are anastomotic fistula, respiratory and cardiac complications, surgical wound infections, urologic complications, thromboembolic complications, recurrent nerve palsy, chylous fistula, necrosis of the gastric tube, among others, which are registered by the Esophagectomy Complications Consensus Group (ECCG)³. The functional stenosis of the gastric tube, because of its rotation, is not one of the most frequent complications but it causes a serious problem in the postoperative period. The patients present intolerance to food, postprandial fullness and they start vomiting, not tolerating liquids or solids.

We report a case of a woman with squamous cell carcinoma in the middle third of the esophagus where a three-field esophagectomy was carried out. The patient presented food intolerance in the immediate postoperative period due to the rotation of the gastric tube. First of all, we tried to dilate the functional stenosis but it did not work because the endoscope couldn't keep the twisted tube open. We also placed a covered metallic stent but the stent had cranially migrated by the third day. Finally, we decided to place a biodegradable stent from the second duodenal portion to the prestenotic area of the plasty by interventional radiologist. Furthermore, the endoscopist fixed with clips the most proximal side of the stent to the mucosa of the gastric tube. Two days later the oral contrast study showed that the stent was correctly in its place and had not migrated. After that, the patient started with the oral intake. Five months have passed since the biodegradable stent was placed and the patient has been asymptomatic with good oral tolerance both for liquids and solids. The purpose of placing a biodegradable stent was for twofold: first, because the long-term degradation of the stent would keep the functional stenosis open and second, because in this way the stent does not require removal.

Before the existence of those minimally invasive techniques, this complication required reoperation with probable disconnection of the digestive tract. In the literature, there are few cases in which this complication is shown and even fewer cases where a therapeutic option is indicated. Endoscopic dilation can be an option with no aggressiveness, but that option does not offer a good result in the short and long term. Casson et al present a case where gastropexy was done, however, the right gastroepiploic artery was injured and finally they had to remove the gastric tube⁴. Other options are described such as plasty-yeyunostomy or performing a retrosternal coloplasty, but morbimortality rates in those cases are very high⁵.

At the beginning the self-expanding metallic stent was created for palliative use for unresectable

esophagus tumors^{6,7}. However, the stent is gaining other therapeutic options. It has been used in benign esophageal anastomotic strictures⁸, in the treatment of fistulas after esophagectomy⁹ and also in the treatment of functional stenosis of the gastric tube. Donkervoort et al¹⁰ present a case of volvulus of the gastric plasty after esophagectomy where self-expandable uncovered Ultraflex stent was placed and after two years with the stent, they proceeded to the removal of the stent without any complication. The endoscopy revealed a normal gastric tube lumen without the previous spiralling obliteration and gastric retention did not recur.

Some complications are registered due to the placement of metallic stent such as pain, nausea and vomiting, acid reflux, stent migration, bleeding and fistulas^{11,12,13}. However, in this case, we used a biodegradable stent and the patient hasn't experienced any of the above complications.

In conclusion, the use of a biodegradable stent fixed with clips in the gastric volvulus plasty after esophagectomy is a therapeutic option. It can prevent the need for surgery with high morbi-mortality. However, more long term studies are still required in order to be sure of its effectiveness.

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Single Incision Laparoscopic Ileocecal Resection for Low Grade Appendiceal Mucinous Neoplasm

By Yasuhiro Ishiyama, Yasumitu Hirano, Reiko Akiyama, Kenji Douden,
Masakazu Hattori & Yasuo Hashidume

Abstract- Introduction: Mucocele of the appendix is a rare lesion which denotes a distension of the lumen due to accumulation of mucoid substance.

Material and Methods: This study aimed to evaluate short-term outcomes of single incision laparoscopic ileocecal resection for low-grade appendiceal mucinous neoplasm (LAMN). This study represents a single-center, retrospective, observational case series analysis. Between January 2011 and July 2015, 9 patients with preoperative appendiceal mucinous neoplasm underwent SILS at our institution.

Results: In this retrospective study, the data of 9 consecutive patients with a mean age of 70 years were analyzed. Pathological findings is 6 LAMN, 1 appendiceal cancer, and 2 appendicitis. The median operative time was 152 minutes, and the median blood loss was little.

Keywords: single incision laparoscopic ileocecal resection, low-grade appendiceal mucinous neoplasm, single incision laparoscopic surgery.

GJMR-I Classification: NLMC Code: WI 480



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Results: In this retrospective study, the data of 9 consecutive patients with a mean age of 70 years were analyzed. Pathological findings is 6 LAMN, 1 appendiceal cancer, and 2 appendicitis. The median operative time was 152 minutes, and the median blood loss was little. No conversions to open surgery or intraoperative complications occurred. Postoperative complication is 1 anastomosis of leakage.

In conclusion, it is thought that minimally invasive procedures, including single incision laparoscopic ileocecal resection, for LAMN.

Keywords: single incision laparoscopic ileocecal resection, low-grade appendiceal mucinous neoplasm, single incision laparoscopic surgery.

I. INTRODUCTION

Appendiceal mucocele is an uncommon pathology of the appendix (0.08 %-0.15%) that is characterized by the accumulation of mucus in the appendiceal lumen (1). Recently, there are few case reports in the literature, in which single incision laparoscopic surgery was accepted as a treatment modality for the low grade appendiceal mucinous neoplasm (LAMN) (2,3)

This study aimed to evaluate short-term outcomes of single incision laparoscopic ileocecal resection for LAMN.

II. MATERIAL

This study represents a single-center, retrospective, observational case series analysis. Between January 2011 and July 2015, 9 patients with preoperative appendiceal mucinous neoplasm underwent SILS at our institution. The parameters examined were sex, age, BMI, ASA classification grade,

pathological findings, surgical procedure, blood loss, conversion to laparotomy, hospital stay, perioperative mortality and morbidity, and rate of readmission within 30 days. All patients were evaluated before surgery by clinical investigations, including total colonoscopy, chest X-ray, and thin-section helical CT. (Figure.1) All patients gave informed consent for their data to be used in future analysis.

III. SURGICAL PROCEDURE

Under general anesthesia, the patients were placed in the modified lithotomy position. First, a Lap Protector (LP; Hakko Co. Ltd., Nagano, Japan) was inserted through a 2.5cm transumbilical incision, the wound was protected. Next, an EZ-access (Hakko Co. Ltd., Nagano, Japan) was mounted to LP and two 5-mm ports and one 10-mm port were placed in EZ-access. Almost all the procedures were performed with usual laparoscopic instruments such as the LCS (Laparoscopic Coagulating Shears), and the operative procedures were much the same as in usual laparoscopic colectomy using a flexible 10mm scope.

First, right colon was mobilized using a medial approach. The ileocolic vessels were divided at the root of them and all of the soft tissue anterior to the superior mesenteric vein was completely removed. All of the soft tissue around the ileocolic artery and vein was completely removed (D3 lymph node dissection). After performing mobilization of the colon without touching tumor, the specimen was extracted through the small incision. Resection was achieved following extracorporealization, and the anastomosis was performed extracorporeally using staplers.

IV. RESULTS

The clinical characteristics and surgical outcomes of the patients are shown in Table 1. In this retrospective study, the data of 9 consecutive patients (8 men, 1 women) with a mean age of 70 years (range, 61–88) were analyzed.

Pathological findings is 6 low-grade appendiceal mucinous neoplasm (LAMN) (Figure 2), 1 appendiceal cancer, and 2 appendicitis.

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The median operative time was 152 minutes (range, 74–213 minutes), and the median blood loss was little. No conversions to open surgery or intraoperative complications occurred. No cases necessaries additional port.

All procedures were completed laparoscopically without perioperative mortality. Postoperative complication is one anastomosis of leakage, one case need to percutaneous gastric forming due to oral feeding difficulty. The mean length of the umbilical incision was 3.0 cm (range, 2.5–3.5 cm). Most patients were discharged on postoperative day 13 (range, 9–56). With regard to postoperative complications, one patient developed pneumonia. No cases were readmitted within 30 days. Regarding the oncologic outcome, no patient developed disease recurrence.

V. DISCUSSION

Appendiceal tumors are rare entities, occurring in less than 2% of all appendectomies. (4) Surgical techniques have traditionally been performed for these tumors to prevent dissemination of the mucocele into the peritoneal cavity.

The previous study have published our series of 8 patients with appendiceal mucocele who successfully underwent laparoscopic resection at theirs institute. (2) The case report study reported that appendiceal mucocele underwent laparoscopic right hemicolectomy. (5)

However, laparoscopic dissection, by grasping of the mucocele and pneumoperitoneum, and transporting the specimen through the abdominal wall, may contribute to peritoneal dissemination of an appendiceal mucinous tumor (6).

Recently, single-incision laparoscopic colectomy (SILC) for colon cancer has been preliminary described by Bucher P et al in 2008(7). Since then many surgeons have attempted to reduce the number and size of ports in laparoscopic surgery to decrease parietal trauma and improve cosmetic results. Single incision laparoscopic colectomy is less possible than conventional laparoscopic surgery not grasping of appendix, cecum (Figure.3), we hypothesis that SILS is suitable for LAMN than conventional laparoscopic surgery. This is because that assistant is none in SILS, it is reduction of touch organ.

Appendiceal mucocele itself dose not have typical clinical features; more than two -thirds of patients have their appendiceal mucocele removed based on incidental findings. It is difficult to diagnosis LAMN preoperative. (8)

We have encountered 9 cases of appediceal neoplasm (Table1) ; six cases were low-grade appendiceal neoplasm, one case was appendiceal cancer, two cases were appendicitis. In these cases, we chose cecectomy with lymph node dissection, due to be

suspected malignancy. All 9 patients are doing well, without recurrence for 22 (7–60) months after surgery.

The previous study in dry box that even though single incision laparoscopic surgery is difficult, experienced laparoscopic surgeons would be able to adapt their training and experience to this new technique. (9) Our institution that only experienced surgeons or surgeons which have Endoscopic surgical skill qualification system in Japanese society for endoscopic surgery performed single incision laparoscopic colectomy for cancer.

In conclusion, it is thought that minimally invasive procedures, including SILS ileocecal resection, for LAMN. Single incision laparoscopic colectomy for LAMN should not grasping of appendix and cecum, however, it is difficult for inexperienced surgeon to perform it.

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Hyaluronidase Injection and Multiple Puncture Technique in the Treatment of Paraphimosis: A Comparative Study

By Dr. Kiran Kumar P S

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Abstract- Background: Paraphimosis is a surgical emergency in surgical practice. A number of treatment options are available for treatment of paraphimosis including surgical and non surgical ones. No randomized studies were undertaken to compare any treatment techniques of paraphimosis. This study attempts to compare the outcome of injection of Hyaluronidase and Multiple puncture technique in the treatment of paraphimosis.

Materials and methods: A randomized controlled study was undertaken in the surgery department of a medical college. About 60 consecutive patients admitted with the history of paraphimosis were randomly divided into two groups. One group received Hyaluronidase injection and another group had been treated by using multiple puncture technique. The patients were followed on seventh day and six months after the surgery.

Keywords: *paraphimosis, hyaluronidase, multiple puncture technique, randomized controlled trial.*

GJMR-I Classification: *NLMC Code: WI 480*



HYALURONIDASE INJECTION AND MULTIPLE PUNCTURE TECHNIQUE IN THE TREATMENT OF PARAPHIMOSIS A COMPARITIVE STUDY

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Results: The study group included both pediatric and adult population. About 43.3% of the patients in Hyaluronidase group and 60% in the multiple puncture technique group had the skin changes and edema was present in 83.3% of the Hyaluronidase and 87.7% of the multiple puncture technique group. The outcome of the technique was 10%, 3.3% and 3.3% of the patients in the Hyaluronidase group had recurrence, need for surgery and post operative pain. About 13.3%, 13.3% and 16.7% of the patients in multiple puncture technique groups had recurrence, need for surgery and post operative pain respectively.

Conclusion: The injection Hyaluronidase was better than the multiple puncture technique in the treatment of paraphimosis.

Keywords: paraphimosis, hyaluronidase, multiple puncture technique, randomized controlled trial.

I. INTRODUCTION

Paraphimosis is not a common condition but when presented, it is a surgical emergency in day to day surgical practice. Paraphimosis is a condition of retraction of the foreskin behind the glans penis in uncircumcised males. The condition is common in young boys and this entity is rare in middle and elderly males.¹ The phimosis can be congenital or acquired is the causative factor for paraphimosis in most of the cases. The congenital phimosis mainly occurs in the young children and acquired is more common in elderly population may be a result of poor hygiene, chronic

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balanoposthitis or forceful retraction of the prepuce, leading to a tight fibrotic ring.² This painful medical condition requires urgent attention and early reduction. If the paraphimosis left untreated, the paraphimosis lands up in severe consequences including strangulation of the glans and tissue necrosis.³ The goal of treatment of paraphimosis is reducing the penile edema and restoring to the prepuce to its original position. A number of treatment methods are available for the paraphimosis. They include the use of gentle manual compression, osmotic agents or ice. The invasive modes of treatment include glans aspiration, dorsal slit procedures, injection of Hyaluronidase etc which are often used when the non invasive methods fails.⁴ The literature available shows the success and failures of different treatment methods in one or two cases. Similarly, the literature shows that the Hyaluronidase injection has shown efficacy in two cases.⁵ The Hyaluronidase degrades the hyaluronic acid and enhances the diffusion of trapped fluid in the tissue planes to decrease the preputial swelling.⁶ Where as multiple puncture technique permits the safe and effective evacuation of the trapped fluid.⁷ None of the studies are available to compare the efficacy and recurrence of these methods in the literature available. Hence, this study was undertaken in a tertiary care setting in Karnataka.

II. MATERIALS AND METHODS

A randomized controlled study was taken up in order to determine the efficacy and recurrence of multiple and puncture technique and injection of hyaluronidase in the general surgery department of Basaveshwara Medical College and Hospital, Chitradurga. About 30 patients admitted to the surgery department were randomly divided in to two groups with the help of computer generated random numbers. In the patients of multiple puncture technique group, using a 24 – 26 G needle one or several openings were done in the edematous prepuce distal to the constricting ring to allow the edematous fluid to escape from the puncture sites with the manual compression of the glans and prepuce. In Hyaluronidase group, injection of Hyaluronidase was given into one or more sites of the edematous prepuce to facilitate the reduction of

paraphimosis. The patients were followed up after one of the procedure, 7 days and 15 days and at six months. The recurrence, need for surgery and success were noted in a predesigned proforma. The data thus

collected was analyzed by using Statistical Package for Social Services (SPSS vs 21). Chi square test was applied to study the significance between the two procedures.

III. RESULTS

Table 1 : Socio demographic characteristics and clinical parameters of the study sample

	Particulars	Hyaluronidase group N = 30	Multiple puncture technique group N = 30
Age in years, Mean (\pm SD)		21.13 (\pm 9.6)	14.1 (\pm 7.3)
Etiology [n (%)]	Pediatric	13 (43.3)	16 (53.3)
	Adult	17 (56.7)	14 (46.7)
Skin changes [n (%)]	Absent	17 (56.7)	12 (40.0)
	Present	13 (43.3)	18 (60.0)
Edema [n (%)]	Absent	5 (16.7)	4 (13.3)
	Present	25 (83.3)	26 (87.7)

The mean age of the patients in Hyaluronidase group 21.13 (\pm 9.6) years and multiple puncture technique group is 14.1 (\pm 7.3) years. About 43.3% of the cases in the Hyaluronidase and 53.3% in the multiple puncture technique group were pediatric cases. About 56.7% of the adults in the Hyaluronidase group

and 46.7% in the multiple puncture technique group were adult cases. About 43.3% of the patients in Hyaluronidase group and 60% in the multiple puncture technique group had the skin changes. Edema was present in 83.3% of the Hyaluronidase and 87.7% of the multiple puncture technique group of patients.

Table 2 : Outcome of the two different procedures

Outcome	Hyaluronidase group (N = 30) n (%)	Multiple puncture technique group (N = 30) n (%)
Recurrence	3 (10.0)	4 (13.3)
Need for surgery	1 (3.3)	4 (13.3)
Post operative pain	1 (3.3)	5 (16.7)

At the end of six months of follow up, 10% of the patients in the Hyaluronidase group and 13.3% of the patients in the multiple puncture technique groups had recurrence of the paraphimosis. About 3.3% of the patients in Hyaluronidase group and 13.3% of the patients in the multiple puncture technique group needed surgery again within six months. About 3.3% of the patients in Hyaluronidase group and 16.7% in the multiple puncture technique group had post operative pain.

the patients with paraphimosis also reported in other studies.⁴ This condition mainly results in venous and lymphatic returns from the glans and distal foreskin is obstructed and these structures swell alarmingly causing more pressure within the obstructed ring of prepuce.⁹

A number of treatment options are available for the management of paraphimosis including operative and non operative methods including puncture techniques, osmotic methods, aspiration methods and using Hyaluronidase etc. Multiple puncture technique is a common procedure often practiced frequently under even ordinary peripheral surgical settings. This procedure allows the edematous fluid to escape for the puncture sites with manual compression of the glans and prepuce.^{10, 11} The band of the prepuce has to be divided if the condition could not improve with these methods.¹²

Injection of Hyaluronidase in to one or more sites of the preputial edema has been shown to facilitate the reduction of paraphimosis.^{13, 14} The main acting principle of Hyaluronidase disperses extracellular edema by modifying the permeability of intracellular ground substance in the connective tissue, enhancing diffusion of trapped fluid between the tissue planes to decrease the preputial swelling. Some of the studies consider that the method of reduction is not the effect of

IV. DISCUSSION

This study was undertaken mainly to compare the two different procedures. The literature available is very sparse about the comparison of procedures. The sample size in those studies was also a problem where only cases studies can be found. The main concern behind paraphimosis repair is to relieve the pain and to reduce further ischemia of the glans penis.

This study has shown that the paraphimosis is a disease condition of both children and adult population. Skin changes and edema are the common accompaniments of the disease. The literature available shows that the phimosis is the main cause of paraphimosis in the pediatric population and acquired phimosis is the main cause for the paraphimosis in cases of adult population.² Skin changes and edema in

Hyaluronidase but punctures made during the procedure. This procedure is contraindicated in presence of infection.¹⁵

Since the randomized controlled studies are lacking, this study results could not be compared. The Hyaluronidase group of patients had shown less chance of recurrence, need for further surgery and post operative pain when compared to the patients of multiple puncture technique group. The recurrence was observed in Hyaluronidase group among those who presented late to the surgeon. It may substantiate the acting principle of Hyaluronidase as reported by the available literature.^{13, 14}

V. CONCLUSION

This study had shown that the injection of Hyaluronidase results in lesser recurrence, need for the surgery and post operative pain than the multiple puncture technique. This is a randomized controlled study of first of its kind. The results may help other researchers to undertake many more randomized controlled studies across different parts of the world to reproduce similar results.

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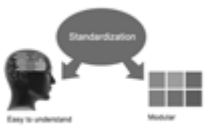
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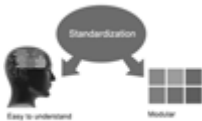
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Note :

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- In case of “Difference of Opinion [if any]” among the Board members, our decision will be final and binding to everyone.

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3. Submission of Manuscripts,
4. Manuscript's Category,
5. Structure and Format of Manuscript,
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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 through 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.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
- 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.

Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.



Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

- Adhere to recommended page limits

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

- Use standard writing style including articles ("a", "the," etc.)
- Keep on paying attention on the research topic of the paper
- Use paragraphs to split each significant point (excluding for the abstract)
- Align the primary line of each section
- Present your points in sound order
- Use present tense to report well accepted
- Use past tense to describe specific results
- Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives
- Shun use of extra pictures - include only those figures essential to presenting results

Title Page:

Choose a revealing title. It should be short. It should not have non-standard acronyms or abbreviations. It should not exceed two printed lines. It should include the name(s) and address (es) of all authors.



Abstract:

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.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Yet, use comprehensive sentences and do not let go readability for brevity. You can maintain it succinct by phrasing sentences so that they provide more than lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study, with the subsequent elements in any summary. Try to maintain the initial two items to no more than one ruling each.

- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including definite statistics - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As an outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an abstract must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

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The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- 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:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.



- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
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Materials:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- 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.

Methods:

- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- 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.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- 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

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

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
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Discussion:

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- 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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<i>Introduction</i>	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
<i>Methods and Procedures</i>	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
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<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



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