



GLOBAL JOURNAL OF MEDICAL RESEARCH  
SURGERIES AND CARDIOVASCULAR SYSTEM  
Volume 13 Issue 4 Version 1.0 Year 2013  
Type: Double Blind Peer Reviewed International Research Journal  
Publisher: Global Journals Inc. (USA)

# Stapled Haemorrhoidopexy for the Management of Haemorrhoids in Sudan

By Rania Hassan Saad Ahmed, Aamir Abdullahi Hamza  
& Huzaifa Elamin Elkhalifa

*Medical Specialization Board, Sudan*

**Abstract- Background :** Haemorrhoidectomy is a commonist anal surgical procedure which is usually associated with post operative pain , Stapled Haemorrhoidopexy (SH) is a new alternative to conventional haemorrhoidectomy (CH). It was first described by Dr. Antonio Longo, in 1998 and since then it has been widely adopted, and can be used in the management of 2<sup>nd</sup> , 3<sup>d</sup> and 4<sup>th</sup> degree hemorrhoids.

**Objective :** To audit (SH)in Sudan and to show its effectiveness in the treatment of haemorrhoids.

**Keywords:** *stapled haemorrhoidopexy, haemorrhoids, haemorrhoidectomy.*

**GJMR-I Classification :** *NLMC Code: QZ 268, WO 141*



*Strictly as per the compliance and regulations of:*



© 2013. Rania Hassan Saad Ahmed, Aamir Abdullahi Hamza & Huzaifa Elamin Elkhalifa. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License (<http://creativecommons.org/licenses/by-nc/3.0/>), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

# Stapled Haemorrhoidopexy for the Management of Haemorrhoids in Sudan

Rania Hassan Saad Ahmed<sup>α</sup>, Aamir Abdullahi Hamza<sup>σ</sup>, Huzaifa Elamin Elkhalifa<sup>ρ</sup>

**Abstract- Background :** Haemorrhoidectomy is a commonest anal surgical procedure which is usually associated with post operative pain, Stapled Haemorrhoidopexy (SH) is a new alternative to conventional haemorrhoidectomy (CH). It was first described by Dr. Antonio Longo, in 1998 and since then it has been widely adopted, and can be used in the management of 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> degree hemorrhoids.

**Objective :** To study (SH) in Sudan and to evaluate its effectiveness in the treatment of haemorrhoids.

**Patients and Methods :** It is a retro-prospective descriptive study. Conducted at multicentres (7 hospitals) in the period from 2009 January to 2013 August. It included all Cases of 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> degree haemorrhoids underwent (SH) procedure. Data regarding the clinical presentation, duration of the surgery, postoperative complications, duration of hospital stay and period of retaining to normality were reviewed and analyzed using (SPSS) .The mean follow up duration was 28 months.

**Results :** The study included 100 patients, 80 men and 20 women (23 – 85) years with mean age (42.2years ± SD 14.2). Male to female ratio was 4:1. This male gender preponderance was found to be statistically significant (P value 0.007)

The most frequent symptoms either alone or in combination with other symptoms were pain 83%, swelling/prolapse 57% or bleeding 64%. Third degree haemorrhoid represents 56% of the patients, 4<sup>th</sup> degree haemorrhoid in 34% and 10% had second degree who were not respond to conservative management. The mean duration of surgery was (35.6 minutes ± SD 19.4) and ranged between (15 -120) min. The immediate post-operative pain was experience by 68 patients 68% and assessed by Visual Analogue Scale, mild to moderate pain in 53% of the patients and the pain fade by day three post-operative in 89%. Minor post-operative complications were seen in 66 patients. In more than half of them it was pain with or without defecation 45%, bleeding in 8%, urine retention in 6%. During the follow up which extend from one month to fifty five months 27% of the patients developed late complications, as recurrence, stenosis, incontinence or others in 16%, 4%, 3% and 4% respectively. The mean hospital stay was (39 hours ± SD 29.5), 61% of the patients were discharged within 24 hours. There was 51% of the patient return to their normality in the first post operative week. Half the patients return to their work in less than three weeks. In general 85% of the patients show a full satisfaction to the procedure.

**Conclusion :** (SH) can be safely performed with low recurrence and complication rates while offering a minimal postoperative pain and hospital stay, and early return to normality.

**Author α:** (MBBS) University of Gezira, (MD) General Surgery(SMSB)

**Author σ:** (MD) University of khartoum, Associated Professor of General Surgery University of Bahri.

**Author ρ:** (FRCS) England, Diploma Laparoscopic surgery France.

**Keywords:** stapled haemorrhoidopexy, haemorrhoids, haemorrhoidectomy.

## I. INTRODUCTION

Haemorrhoids are inflammation or prolapse of the vascular tissues of the anal canal. They are the most common anal disorder and affect people of any age and gender.

Ironically the word haemorrhoids indicates the normal tissues that located around the anal canal as a cushion which facilitate defecation and prevent fluid leak, as well as it was given when some pathological changes associated with it and lead to disrupt it's function.

Before 1975 surgeons delt with haemorrhoids as varicosity of the haemorrhoidal veins, but in 1975 an anatomical and clinical study aimed at uncovering factors likely to be helpful in understanding the true nature of haemorrhoids was described. The main finding was of specialized "cushions" of submucosal tissue lining the anal canal, it was argued that piles are merely the result of their displacement. Conventional haemorrhoidectomy(CH) removes the haemorrhoidal tissue leaving the cushions of submucosal tissue lining the anal canal which tends to elongate again leading to recurrence<sup>(1)</sup>.

(CH) provides symptomatic relief for most patients, and effectively treats the external component of the haemorrhoids. However, the wounds created by the surgery are usually associated with considerable post-operative pain which sometimes necessitates prolonged recovery period. This can put stress on general practitioner's resources, may alienate the patient and delays the patient's return to a full, normal lifestyle. Because of this, surgeons will generally reserve formal excision for the most severe cases of prolapse, or for patients who have failed to respond to conventional otreatments<sup>(2)</sup>.

With the advent of modern surgical stapling techniques, the introduction of circular stapled haemorrhoidectomy (or stapled haemorrhoidopexy)(SH) has come to the forefront as a possible solution to this problem.

Stapled Haemorrhoidopexy (SH) is a new alternative to (CH). This procedure was first described by an Italian surgeon – Dr. Antonio Longo, Department of Surgery, University of Palermo – in 1998 and since then has been widely adopted through Europe<sup>(3,4)</sup>.

(SH) is a minimal invasive procedure performed through the anus, requires no external incisions, and leaves no visible scars; it also has the advantage of reducing postoperative pain and hospital stay<sup>(6)</sup>.

## II. OBJECTIVES

### a. General objective

To study the local experience of stapled haemorrhoidopexy in Sudan as a new modality of management of 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> degree Haemorrhoids, and to determine its advantages and disadvantages.

### b. Specific objectives

To find out :

- Theatre operating time.
- Post operative pain.
- Period of return to normal activity.
- Hospital stay.
- Complications rates.

## III. PATIENTS AND METHODS

This is a multicenter, retro-prospective descriptive study, conducted mainly at Fedail hospital. The prospective part over a period of one year from 2012 September to 2013 August. While the retrospective part from 2009 January to 2012 August.

All new and old cases of haemorrhoids underwent SH procedure were included. Patient refused to participate in the study or not reachable were excluded. Patients underwent SH were contacted through their telephone numbers to fill the questionnaire. Consecutive non probability sampling was used.

Data was collected using a well-constructed pretested questionnaire. The variables included: demographic data, diagnosis, past surgery for haemorrhoids, duration of surgery, postoperative complications, duration of hospital stay, disappearance of symptoms after and retaining to normality. Data was analyzed using computer program statistical package of social sciences (SPSS) version 20. Descriptive, frequency and Chi-square test were used when appropriate and P value was considered significant if  $\leq 0.05$ .

Patient consent, ethical clearance and hospital administration approval were obtained in advance.

## IV. RESULTS

### a. Demographics

This study includes 100 patients from 7 hospitals. The mean age was (42.2 years  $\pm$  SD14.2), ranging from 23 – 85 years. Seventy one percent were  $\leq 50$  years of age, and the highest prevalence in the fourth decade of life 35%, with only five percent above 70 years (**Figure 1**). Males constituted 80% of our patients and the male to female ratio was 4:1.

This male gender preponderance was found to be statistically significant (P value 0.007).

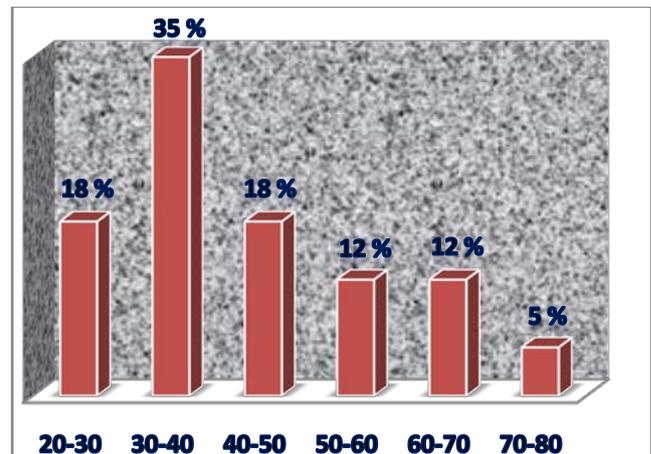


Figure 1 : Age distribution of the patient underwent (SH)

### b. Presenting symptoms

Single symptom was seen in 28% as (bleeding, swelling /prolapse, pain or constipation) two symptoms in 23% and different combination of three or more symptoms in the majority of patients 49%

The most frequent symptoms either alone or in combination were; pain 83%, swelling/prolapse 57% or bleeding 64%.

The pain severity ranged from mild, moderate to severe in 28%, 17% and 40% respectively. Two third of the patients did not have a symptoms suggestive of IBS.

### c. Past history of anal procedure

Fourteen percent (n=14) of the patients had past history of haemorrhoidectomy (in one of them it was stapled haemorrhoidopexy) where 4%, 2% and 1% had fissurectomy, fistulectomy and abscess drainage respectively.

### d. Diagnosis

All patients were subjected to digital rectal examination and proctoscopy. It revealed third degree haemorrhoid in 56% ,fourth degree haemorrhoid in 34% and 10% had second degree who were not respond to conservative management. Thirty percent had associated anal fissure, fistula in ano was seen in three patients. No perianal abscess or anorectal cancer was detected.

### e. Stapled haemorrhoidopexy

All patients in the study underwent stapled haemorrhoidopexy after medical assessment and fitness for the procedure, following the standard steps and precautions of the Longo technique, most of operations were done by single consultant surgeon. The stapling was done under spinal anaesthesia for all patients and in lithotomy position.

*f. Duration of haemorrhoidopexy*

The mean duration of surgery was (35.6 minutes  $\pm$  SD 19.4). It ranged from 15 to 120 minutes. In the majority 63% the operations were completed in  $\leq$ 30 minutes. But few took longer, as four patients 4% in more than one hour (Table 1).

Table 1: Operative time in the study

Time take (min.)	Frequency	Percentage
$\leq$ 30 min	63	63%
31- 60 min	33	33%
61- 120 min	04	04%
<b>Total</b>	<b>100</b>	<b>100%</b>

Table 2 : Severity of immediate post-operative pain in patients underwent stapled haemorrhoidopexy

Severity of pain	VAS*	Frequency	Percentage
Mild	1- 4	29	29 %
Moderate	5- 7	24	24 %
Severe	8- 10	15	15 %
No Pain	00	32	32 %
<b>Total</b>		<b>100</b>	<b>100%</b>

\*VAS: Visual analogue score

*h. Duration of post-operative pain*

The duration of post-operative pain varied between patients, but in the great majority (63 patients 92.5%) of those who experience pain it continues for one week only. Two, three and four weeks were seen in 4.5%, 1.5% and 1.5% of the patients respectively. In 63 patients, the pain takes only one week, it fade by day three post-operative in 88.9% of them (Table 4).

Table 4 : Duration of the Post-operative pain in the first week

	Number of patients	Percentage
One day	32	50.8%
Two days	14	22.2%
Three days	10	15.9%
Four days	01	01.6%
Five days	01	01.6%
Seven days	05	07.9%
<b>Total</b>	<b>63</b>	<b>100%</b>

*i. Post-operative analgesia*

Post-operative analgesia in the form of Diclofenac sodium was given to 63 patients. Half of them started as oral analgesia and the other half as injectable. In the latter group 18 patients were discharged on oral analgesia. Eighty six percent (55 out of 63 patients) continued analgesia for one week (86%), 5% for two weeks, 7% for three weeks and only a single patient 2% for one month. When considering those who received it for one week, the majority (60%) had it for the first three days only.

*j. Relation of post-operative pain and other parameters*

The duration of surgery and the form of analgesia used , significantly influenced the severity and

*g. Post-operative pain*

The immediate post-operative pain after convalescence from spinal anaesthesia was experienced by 68 patients 68%. Visual analogue scale from (0- 10) was used to describe the severity of pain. Mild to moderate pain was seen in 53% of the patients while sever in 15% and one third of the patients experienced no pain (Table 2).

duration of post-operative pain experienced by the patients. None of the following parameters was found to have statistical role in the severity and duration of post-operative pain: age, gender of the patients, preoperative pain, and degree of haemorrhoid, associated anal conditions or previous history of anal surgery including haemorrhoidectomy (Table 4).

Table 5 : Relation of post-operative pain to other patient parameters

Parameters	P value
Age	0.558
Gender	0.416
Preoperative pain	0.280
Degree of haemorrhoids	0.890
Associated anal condition	0.282
Previous haemorrhoidectomy	0.791
Past history of anal surgery	0.740
Duration of surgery	0.029
Type of analgesia	0.054
Hospital stay	0.458

*k. Post-operative complications*

*Immediate post-op complications* : Minor post-operative complications were seen in 66 patients. In more than half of them it was pain with or without defecation 45%, bleeding in 8%, urine retention in 6% and others in 7% (swelling, discharge, constipation or diarrhea/fecal urgency).

*Spinal anaesthesia complications* : As all patients were operated under spinal anaesthesia, 29 patients (29%) developed related complications, back pain in 13 patients, headache in 8 patients and similar number developed both. Most of these complications 75% resolved within the first week and 14% took more than four weeks.

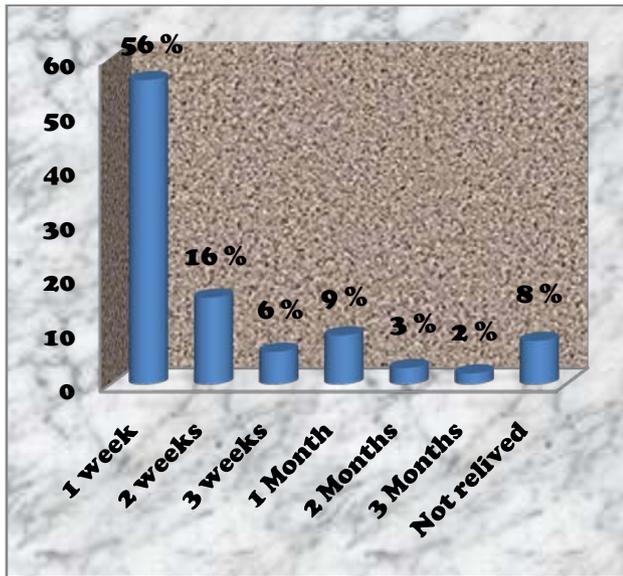
*Late complications* : During the follow up which extend from one month to fifty five month, 27 patients 27% developed some late complications, as recurrence, stenosis, incontinence or others in 16%, 4%, 3% and 4% respectively. And 15% had persistence of their symptoms.

#### *l. Hospital stay*

The mean hospital stay was (39 hours  $\pm$  SD 29.5), ranging from 24-240 hours. Sixty one percent of the patients were discharged within 24 hours and 9% after more than three days.

#### *m. Disappearance of the symptoms*

The outcome of the procedure was assessed by complete resolution of the presenting symptoms. Symptoms disappeared within the first week in 56 patients (56%), and within the second week in 16 patients (16%) and few patients took longer. Of the latter group 8 patients (8%) complained that they were not relieved even after three months (**Figure 2**).



**Figure 2** : Disappearance of symptoms after (SH)

#### *n. Return to work*

Half the patients returned to their work in less than three weeks, one quarter in four weeks and similar percentage took more than four weeks.

In general 85% of the patients show a full satisfaction to the procedure and 15% did not.

## V. DISCUSSION

This study included 100 patients operated at seven hospitals and it had been conducted in the period from 2009 Jan to Aug 2013, the mean follow up period was 28 months (1-55) months, this period lies within the range of the follow up period that the most of the international studies had been held on it e.g.in Greece (6-72) months<sup>(6)</sup>, in Dubai study 18 months<sup>(7)</sup>, in Brazil study 20 months (14-60) months<sup>(8)</sup>. The number of the

patients was increased through the last two years, this indicate the awareness about stapler haemorrhoidopexy.

The mean age is (42.2 years  $\pm$  SD 14.2), the most age group is between (30 – 40) years 35%, the range is (23-85), 71% were  $\leq$  50 years and 5%  $\geq$  70 years .This result is similar to that held in Greece<sup>(6)</sup> and near to study done in Dubai: Male to Female ration is 4:1, this is near to Dubai which is 3:1 and the reverse was in Iran where number of female was larger than male<sup>(7,9)</sup>.

Generally the presenting symptoms is similar to that reported in the literature and in our study the most presenting symptom was pain (83%) either alone or combined with other symptoms, while in Malaysia the study by Mr Abdulwahab the pain represent 42.5%<sup>(10)</sup>. The presentation of bleeding and prolapsed symptoms were (42%) and (51%) respectively and in Carlos Walter, et al study it was significantly high (96.1%) and (96.7%) , while the bleeding in our study is typical to that of the study held in Malaysia ( 42.6%) and prolapse presentation was 100% which is double to our study<sup>(6)</sup>.

The majority of patients diagnosed to have 3<sup>rd</sup> haemorrhoid (n=56) 56% , (n=34) 34% had 4<sup>th</sup> and (n=10) 10% had 2<sup>nd</sup> who were not respond to conservative management, the same result was noticed in the study done by Grigoropoulos P, et al and revealed that most of the patients who underwent stapled haemorrhoidectomy diagnosed to have grade III haemorrhoids 67% and grade IV is 27.6% and the least was grade II 4.8%. This giving an attention to that stapled haemorrhoidopexy is performed mostly in those with grade III<sup>(6)</sup>.

In our study we found 30% of the patients had associated anal fissure which were treated at the same session and also 3% of patients had low anal fistula and it had been treated at the same session although it is contraindicated, luckily they had an uneventful recovery, in comparison to other studies no associated anal pathology was found.

In our study we found that Fourteen percent (n=14) of the operations were done for the patients who had a recurrence from a previous conventional haemorrhoidectomy and one had stapled haemorrhoidopexy. it was a re do for a very large haemorrhoids in the first presentation<sup>(11)</sup>.

The mean duration of the surgery was 23 minutes, 30 minutes and 36.2 minutes in Brazil, Dubai and Sudan respectively the range in our study (15 – 120 minutes) whereas the range is (16-48 minutes) in Brazil study<sup>(8,7)</sup>. The duration in our study is more than others due to presence of two patients surgeries lasting for 120 minutes, because of developing hypotension during the procedure.

Sixty eight patients (68%) suffered from post-operative pain, it was assessed by (VAS), the pain was mild in (29%) , moderate in (24%) and severe in (15%) most of them their pain disappeared within the first

post operative week 92.5% and in 17% represent  $\leq 2$  in VAS and in 50% the pain last for 1 day just. In our study 32% of patient never experienced pain post-operatively. This is near to the results reported by Arroyo A, et al. 70% of patients developed  $\leq 2$  in VAS on the first post-operative day and reported a very closed result to our study in the first post-operative week (95%)<sup>(11)</sup>. The pain was minimal or even nonexistent in the study done by Grigoropoulos P, et al.<sup>(6)</sup> and mild to moderate pain represented 79.6% in Aziz R, et al study<sup>(9)</sup> which was greater than our study.

Among these patients 63 (93%) needed analgesia, 51% respond to NSAID tablets, 21% needed injectable form of NSAID and 2 patients received pethidine the rest was given injection in the hospital and continued on by tablets, similar to the Iran experience where the pain was relieved by NSAID or acetaminophen while in Brazil they used oral dipyrone and celecoxib and that controlled the pain in 85% of patients and 5 patients needed opiates<sup>(9,8)</sup>.

Sixty six percent reported immediate anal complication. Pain without motion in 27%, bleeding in 8%, which was more than reported by Angelone G, et al and reported by Faris Dawood (3.9%, 1%) respectively, but less than that reported by Carlos Walter, et al (10.3%)<sup>(12,7,8)</sup>.

Urine retention reported in 6% of patients, one patient treated by temporary catheterization and the others resolved spontaneously, this percentage is larger than that of Greece study which was 2.4% and it was temporary retention and the use of catheter was not needed and 8% in Dubai study<sup>(8,7)</sup>. Seven percent had other symptoms like swelling, discharge, constipation, and fecal urgency and that was reported in Dubai where fecal urgency was 25%, in Italy 14% and in Greece 6.5% but fortunately in our study we have just 1%<sup>(7,12,6)</sup>.

Unfortunately in our study there is significant post operative anesthetic complication like neck pain, back pain and headache however these complications resolved quickly and had been minimized after the patients advocated postoperatively to take plenty of oral fluids particularly caffeinated drinks.

The mean hospital stay was (39 hours SD  $\pm$  29.5), the minimum 24 hours in 61% and the maximum 240 hours in one diabetic patient, the prolonged stay was advised by the physician because the patient had poorly controlled diabetes. Otherwise our hospital stay is more or less comparable to other studies.

Fifty six patients (56%) reported complete resolution of the presenting symptoms within the first week while only 8 patients showed their dissatisfaction.

Fortunately there were 51% of the patients returned to their normality in the first post operative week in terms of returning to their regular dietary habits, normal defecation and sitting. 9% took more than 4 weeks. One of them developed wound infection and admitted again

for regular dressing. While Iran study showed 99% of the patient returned to their normal activity within 48 hours<sup>(9)</sup>.

When we look at return back to their work, we found 50% of the patients returned to work in the first & second post operative week and 16% delayed because of (pain, difficulty in sitting for a long period, anaesthetic complication, recurrence and that patient who developed wound infection).

During follow up period (1 month-55 months) we found that 15% had persistent symptoms, recurrence 16% compared to Italy (2.2%), Brazil (1.3%), and no recurrence at all in Greece.<sup>(12,8,6)</sup> where in Germany study Kim JS et al reported 18% recurrence rate<sup>(13)</sup>. So our recurrence rate is higher than that reported in the most of international review. Also we found that during the first couple of years of using the stapler which was available in Sudan is a low volume staple and later on there was introduction of the high volume stapler and more or less replaced the use of low volume stapler, this partially may explain the increased recurrence rate in the first few years of the procedure.

On the other hand when the patients developed complications, they hardly reviewed the doctor who treated them, I wish if public health educationalist can address this problem. In our study we had one patient who came back complained of recurrence which was expected at the time of the operation because he had an extremely very large haemorrhoid, and had been informed that he might have another session and so operated on him again. In Spain 14 patients had recurrence 4 of them treated by (MM), 2 treated by SH and 6 required treatment by rubber band ligation<sup>(11)</sup>.

Stenosis is one of the late complications in our study 4% of the patients claimed that they had stenosis which is not verified clinically and most likely they had muscular spasm, as the procedure performed in the rectal mucosa high above the dentate line and there was no interference with the whole rectal wall, as post excision of the specimen had been examined clinically and showed it only contained mucosa and submucosa. Our result is higher than what had been reported in Dubai study (2%) and in Brazil study where there was no stenosis<sup>(7,8)</sup>.

Regarding the incontinence we reported it in (3%) of the patients in terms of passing loose motion with urgency and we could not find a causal association with the procedure, in Brazil study there is no incontinence<sup>(8)</sup>.

Others complication like swelling, burning sensation, prolapsed is very minimal. 1% developed itching, while high percentage of itching 21% reported in Dubai study<sup>(7)</sup>.

We did not experience serious complications like rectovaginal fistula like what was reported by Angelone G, et al to young lady, and rectal obstruction by Buyukasik O, et al to 27 years old<sup>(12,14)</sup>.

In general 85% of the patients were fully satisfied to the extent that they are willing to recommend the procedure to others. While 12% of the patients did not have a satisfying outcome and 3% concerned about the cost of the procedure. This is much better than Iran study where 73.5% were fully satisfied with the operation results where as in fact most of the studies reported a full satisfaction from the patients<sup>(9)</sup>.

A major drawback of the procedure is the cost of the stapler added to that it is disposable. But if we compare the benefit of low postoperative pain, reduced amount of analgesia, reduced rate of complication, reduced hospital stay and early return to normality and work can over weigh the disadvantage of the cost. However more studies should be carried to produce cheaper stapler.

## VI. CONCLUSION

- Stapler Haemorrhoidopexy is a new trend of treating 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> degree haemorrhoids and a new alternative to conventional haemorrhoidectomy.
- Stapler Haemorrhoidopexy is a minimal invasive procedure requires no external incision, leaves no visible scars and takes short operative time.
- Since the introduction of stapler haemorrhoidopexy ; the awareness and number of patients were increasing .
- Stapler Haemorrhoidopexy offer to the patients minimal postoperative complications, minimal hospital stay and early return to normality.
- Although Stapler Haemorrhoidopexy is still under researched, the complications reported are mostly minor complications and most of it resolves in short period postoperatively.
- Sticking to the guidelines of the procedure and proper placement of purse-string provides excellent results.
- The outcome of the operation is highly dependent on the training and experience of the surgeon.

## REFERENCES RÉFÉRENCES REFERENCIAS

1. Thomson WHF. The nature of haemorrhoids. *Br J Surg*. 1975 Jul;62(7):542-552.
2. Pescatori M, Gagliardi G. Postoperative complications after procedure for prolapsed haemorrhoids (PPH) and stapled transanal rectal resection (STARR) procedures. *Tech Colorectal*. 2008 Mar;12(1):7-19.
3. Racalbuto A, Aliotta I, Corsaro G, Lanteri R, Di Cataldo A, Licata A. Haemorrhoidal stapler prolapsectomy vs. Milligan-Morgan haemorrhoidectomy: a long-term randomized trial. *Int J Colorectal Dis*. 2004 May;19(3):239-44.
4. Rowsell M, Bello M, Hemingway DM. Circumferential mucosectomy (stapled haemorrhoidectomy) versus conventional haemorrhoidectomy: random-

ised controlled trial. *Lancet*. 2000 Mar 4;355(9206):779-81.

5. Boccasanta P, Capretti PG, Venturi M, Cioffi U, De Simone M, Salamina G, et al. Randomised controlled trial between stapled circumferential mucosectomy and conventional circular haemorrhoidectomy in advanced haemorrhoids with external mucosal prolapse. *Am J Surg*. 2001 Jul;182(1):64-8.
6. Grigoropoulos P, Kalles V, Papapanagiotou I, Mekras A, Argyrou A, Papageorgiou K, et al. Early and late complications of stapled haemorrhoidopexy: a 6-year experience from a single surgical clinic. *Tech Coloproctol*. 2011 Oct;15 Suppl 1:S79-81.
7. Faris Dawood Alaswad, Sukrett Shetty, Our Experience with (CSH) Circular Stapled Haemorrhoidopexy as a Surgical Treatment of Piles, *Journal of the American Society of Abdominal Surgeons*, Winter 2011 / Spring 2012 issue.
8. Carlos Walter Sobrado, Guilherme Cutait de Castro Cotti, Fabricio Ferreira Coelho, Júlio Rafael Mariano da Rocha. Initial experience with stapled haemorrhoidopexy for treatment of hemorrhoids. *Arquivos de GastroenterologiaArq. Gastroenterol*. 2006July/Sept; 43 (3).
9. Azizi R, Danesh-Pageuh MM, Zahedi-Shoolami L. Stapled Haemorrhoidopexy, Initial Experience in Iran. *Shiraz E-Medical Journal*. 2009Jan; 10(1).
10. Abdelwahab mukhtar. A prospective observational study of pain after stapled haemorrhoidopexy thesis submitted as partial fulfillment for the degree of master of general surgery, university kebangsaan, Malaysia, may 2008.
11. Arroyo A, Perez-Legaz J, Miranda E, Moya P, Ruiz-Tovar J, Lacueva FJ, et al. Long-term clinical results of double-pursestring stapled haemorrhoidopexy in a selected group of patients for the treatment of chronic haemorrhoids. *Dis Colon Rectum*. 2011 May;54(5):609-14.
12. Angelone G, Giardiello C, Prota C. Stapled haemorrhoidopexy. Complications and 2-year follow-up. *Chir Ital*. 2006 Nov-Dec;58(6):753-60.
13. Kim JS, Vashist YK, Thieltges S, Zehler O, Gawad KA, Yekebas EF, et al. Stapled haemorrhoidopexy versus milligan-morgan haemorrhoidectomy in circumferential third-degree haemorrhoids: long-term results of a randomized controlled trial. *J Gastrointestinal Surg*. 2013 Jul;17(7):1292-8.
14. Buyukasik O, Hasdemir OA, Col C. Rectal lumen obliteration from stapled haemorrhoidopexy: can it be prevented? *Tech Coloproctol*. 2009 Dec;13(4):333-5.