INTRODUCTION

Haemorrhoids are the hypertrophy of normal vascular cushions located inside the anus that normally seal the anal opening and prevent leakage of gas or stools. Haemorrhoids occur when these cushions become engorged or the tissue prolapses into the anal canal due to engorgement of blood vessels and laxity of the surrounding connective tissue.  

External haemorrhoids are aggregations of congested external perianal vascular plexus covered by perianal skin, while internal haemorrhoids originate from the sub-epithelial plexus of the anal canal above the dentate line. Internal haemorrhoids may be classified according to the degree of prolapse into four degrees, although this may not reflect the severity of a patient’s symptoms.  

The symptoms include discomfort, itching, mucous discharge, bleeding, pain, and prolapse and are associated with a feeling of fullness and incomplete evacuation.  

The best possible treatment of third and fourth degree haemorrhoids is haemorrhoidectomy. Milligan Morgan's Haemorrhoidectomy (MMH) is the most commonly used and is widely considered to be the most effective surgical technique for treating haemorrhoids. Other techniques, such as Ferguson's closed haemorrhoidectomy and Parks sub-mucosal haemorrhoidectomy are still followed at many places.  

Stapled haemorrhoidectomy (PPH), was introduced in the 1990s by Dott. Antonio Longo in Italy.  

ABSTRACT

Objective: To compare the postoperative outcome of stapled haemorrhoidectomy and conventional Milligan Morgan’s open haemorrhoidectomy.

Study Design: Comparative study.

Place and Duration of Study: Surgical Unit 1, Ward-3, Department of Surgery, Jinnah Postgraduate Medical Centre, Karachi, from March to September 2006.

Methodology: Sixty patients of late 2nd, 3rd and 4th degree haemorrhoids were selected for admission from the outpatient department after taking informed consent. Patients with concomitant anal disease (e.g. fissure, abscess, fistula, ano-rectal cancer etc.) were excluded. Two groups of thirty each were made, one for Milligan-Morgan open haemorrhoidectomy and another for stapled haemorrhoidectomy, in which excision of a ring of mucosa proximal to the haemorrhoid(s) was done thus, interrupting the blood supply but maintaining continuity of the rectal mucosa. The operative time was measured in minutes. Postoperative pain was assessed through VAS. Bleeding was measured as no, mild, profuse. Other post-operative complications during hospital stay like urinary retention, anal stenosis etc. were noted. Student t-test, chi-square test and repeated measured analysis of variance were applied to compare the variables.

Results: The mean age was 40.7±11.6 years. A majority (53.3%) of patients (combined % in both groups) had third degree haemorrhoid. The mean length of operative time was found statistically insignificant between open and stapled groups (19.6±5.9 vs. 22.4±7.2 minutes, p=0.974). However, the mean length of postoperative hospital stay was significantly less in the stapled than open haemorrhoidectomy group (3.37±2.2 vs. 2.03±0.81 days, p=0.003. Mean postoperative pain (observed by VAS) in the stapled group was significantly less than the open haemorrhoidectomy group (4.43±1.25 vs. 7.37±0.72). The proportion of postoperative bleeding, infection, anal tag, urinary retention, tenderness on digital rectal examination and wound discharge was higher in open than stapled haemorrhoidectomy group, but statistically insignificant (p < 0.05).

Conclusion: There was a significant difference between Milligan Morgan’s and stapled haemorrhoidectomy for post-operative pain and hospital stay. However the mean length of operative time was insignificantly different.

procedure, a device is introduced into the anal canal which leads to the excision of a ring of mucosa proximal to the haemorrhoid(s) thus, interrupting the blood supply. This procedure can be regarded as a well-established procedure with relatively low complication rates and also leads to drastic reduction in postoperative pain, reduced hospital stay and early resumption to work. However, a stapling gun is an expensive instrument and its long term follow-up shows less complications. This study was done to compare the postoperative recovery and complications of PPH and conventional MMH.

**METHODOLOGY**

This comparative study was conducted in the Surgical Ward-3, the Jinnah Postgraduate Medical Centre, Karachi, from March to September 2006. It included 60 patients suffering from haemorrhoids admitted through the outpatient department who were fit for surgery on medical grounds. The inclusion criteria was age above 20 and below 60 years from either gender and a 2nd degree haemorrhoid after failure of multiple rubber band ligations and 3rd and 4th degree haemorrhoid. Patients with a GCS less than 15, previous peri-anal surgery (except band ligation), anal incontinence, concomitant anal disease (e.g. fissure, abscess, fistula, dermatitis, inflammatory bowel disease, ano-rectal cancer etc.), bleeding disorder patients on anti-coagulant therapy, and those with liver disease or pregnancy were excluded.

Patients were divided in two groups of thirty each for open and stapled haemorroidectomy. Non-probability purposive sampling, a computer generated number was given for randomization. Patients who received odd numbers were selected for MMH and all the patients on even numbers were selected PPH. A detailed history and complete examination of all the patients was done including Digital Rectal Examination (DRE) followed by proctoscopy. Informed consent was taken after explaining the objective of study and operative procedures. Base line investigations like complete blood counts, serum electrolytes, serum urea, creatinine, random blood sugar and X-ray chest PA view and ECG (where needed) were done.

In MMH, excision of haemorrhoids with excision of external haemorrhoids and removal of the peri-anal skin was done. In PPH, excision of a ring of mucosa proximal to the haemorrhoid(s) was done thus, interrupting the blood supply but maintaining the continuity of the rectal mucosa. On admission the Proforma was made part of the case record file and all the entries related to the procedure and postoperative statuses were duly documented. All patients were discharged when their pain was controlled without injectable analgesia and they had no immediate postoperative complication.

The postoperative outcome of the entire procedure was measured by two parameters. Operative time was measured in minutes, and postoperative pain, was measured through Visual Assessment Scale, VAS (0-10) in which “0” correspond to “no pain” and “10” to “maximum pain”. The duration and length of hospital stay was measured in days. Postoperative bleeding was measured as no. 1-2 wound dressing of 4x4 cm required on operative day; mild 3-4 dressing (4x4 cm) required on the operative day; and profuse bleeding (≥ 5 wound dressing (4x4 cm) required on the operative day). Other post operative complications during hospital stay like urinary retention, anal stenosis, infection, postoperative anal fissure and anal tag, postoperative tenderness on DRE, wound discharge and pain and recurrences on first defecation were also observed as present or absent. The patients were followed for upto 3 months in the OPD.

Statistical software “SPSS-10.0” was used for statistical analysis. The continuous response variables like age, operative time, postoperative hospital stay, total length of hospital stay and pain score (VAS) were presented by mean ± SD. Student’s t-test was applied to compare above mentioned continuous response variables.

Repeated measured analysis of variance was performed for comparison of postoperative pain score on subsequent periods of times; the significance of effect between groups and within the subject. The chi-square test was applied to compare significance or proportions of above categorical variables between open and stapled haemorroidectomy groups. P-value < 0.05 was considered statistically significant in this study.

**RESULTS**

Out of 30 patients who underwent MMH, 24 (80%) were males and 6 (20%) females (M: F = 4:1) while among those who underwent PPH, 20 (66.7%) were males and 10 (33.3%) females (M: F = 2:1). The difference of gender distribution undergoing two different procedures was thus statistically not significant (p=0.243).

The mean age of 60 patients who underwent the trial was 40.7±11.6 (ranging from 20 to 60 years). The mean age of patients who underwent PPH was found higher than those who underwent MMH 40.1±11.5 years, p=0.716).

A majority (53.3%) of patients in both groups had third degree haemorrhoids followed by 24 (40%) having 4th degree haemorrhoids. Second degree haemorrhoids were observed in 2 (6.7%) patients each of both groups. The difference in the degree of haemorrhoids was statistically insignificant (p=0.269) between two groups. The mean length of operative time was found statistically insignificant between open and stapled groups (19.6±5.9 vs. 22.4±7.2 minutes , p=0.974).
The mean length of postoperative hospital stay was significantly less in the stapled than open haemorrhoidectomy group (3.37 ± 2.2 vs. 2.03 ± 0.81 days, p=0.003). The same pattern of statistical significance was observed while comparing total hospital stay between two groups (4.80 ± 2.62 vs. 2.93 ± 2.32 days, p=0.005).

The pain score on the 1st postoperative day in the group of patients who underwent PPH was significantly less than that of the MMH group (4.43±1.25 vs. 7.37±0.72) and the same trend was found till postoperative day-6 (0.77±1.38 vs. 0.13±0.35). However, difference of postoperative mean pain score was insignificant on postoperative day-7 and 8 between two groups (Figure 1).

Out of the 30 patients of MMH, 4 (13.3%) patients reported mild and 2 (6.7%) patients reported profuse bleeding on 1st postoperative day while in PPH group, 3 (10%) patients reported mild and 1 (3.3%) patient profuse bleeding. On subsequent follow-ups, the proportion of postoperative bleeding was not statistically significant between the MMH and PPH group (Table I, Figure 2). Postoperative infection was observed in only one patient (3.3%) who underwent MMH.

The proportion of anal tag was higher but statistically insignificant in the MMH than PPH group (30% vs. 13.3%, p=0.209). The proportion of urinary retention was insignificantly higher in the MMH group (10% vs. 6.7%, p=0.999). A similar pattern of significance (p=0.999) regarding postoperative anal fissure and anal stenosis was observed between the two groups.

A higher proportion of tenderness on per rectal examination at 1st postoperative week was observed in the MMH group (46.7% vs. 23.3%) but statistical significance could not be found (p=0.058). A similar pattern was observed on the 2nd week of postoperative follow-up.

The proportion of wound discharge was higher in the MMH group on the 1st week of postoperative follow-up (26.7% vs. 10%, p=0.181) but statistically insignificant. A similar pattern of significance with comparatively low proportions was observed in the postoperative 2nd week.

Six (20%) patients of the PPH group did not report postoperative pain on day-1 defecation whereas all 30 patients of the open haemorrhoidectomy group reported pain on day-1 defecation that was significantly different between two groups (p=0.024).

### DISCUSSION

The hypothesis of this study was that there is no difference in postoperative results of MMH and PPH. However, this study conducted on 60 patients showed that patients who underwent PPH haemorrhoidectomy experienced less postoperative pain, had a shorter postoperative hospital stay and fewer postoperative complications when compared with the result of MMH which was against the hypothesis. There were statistically insignificant differences in terms of operative time, which partly proved the working hypothesis.

In this study, the mean age of 60 patients who underwent the trial was 40.7±11.6 (ranging from 20 to 60) years. Other international studies show a similar pattern of age distribution.8

The majority of the patients in this study were male. When compared to other studies, You et al., reported a male to female ratio of 1:1.9 However, results similar to this study were found by other local researchers.10, 11 This may be due to the fact that the majority of women suffering from haemorrhoids fail to seek any medical assistance due to social and cultural factors. They
usually present late in the course of the disease only when their symptoms became unbearable.

The results of this study for mean length of operative time for PPH with international studies were similar.12,13 However, international studies showed that a shorter time is required for PPH when compared with MMH. It was also observed that the operative time gradually decreased in subsequent cases of PPH, in this study. This, therefore, reflected the fact that PPH is a comparatively new technique in the local set up.

The majority of the patients presented with haemorrhoid at all three (3, 7 and 11° O clock) positions. The majority (53.3%) of patients in both groups had third degree haemorrhoids resembling the results of other studies (p=0.269).16

The numbers and degree of haemorrhoids influencing the operative time is still a debatable issue. This is because more time is required in dissection, haemostasis and application of sutures. Inouea et al. noticed that the number of stitches during purse-sting suture, has an influence on the operative time of PPH. Therefore, three stitches instead of six or more save time.17

According to this study postoperative pain was the most distressing sequel of MMH, when compared with the result of PPH gun which has been used now-a-days to reduce the pain in this procedure. On reviewing international studies, the most consistent findings among these trials include less pain and hence, a shorter length of hospital stay in cases dealing with PPH.18,19

So far, the greatest criticism of PPH was raised by Cheetham et al.22 He abandoned a randomized control trial prematurely upon noticing severe symptoms including rectal pain and urgency. He stated that these complications may be due to the incorporation of muscle into the excised tissue (doughnut), differences in surgical practice, and the presence of concomitant anal pathology.22

As PPH does not involve dissection and excision of peri-anal skin, this undoubtedly reduces pain, which has a direct implication on hospital stay or early return to work. This can also be explained by the fact that pain during defecation after this procedure, directly correlates with the presence of an open wound in the highly sensitive anal canal. These finding were supported in two different studies by Van de Stadt and Gravie.13,14

VAS is a subjective outcome to measure pain. However, it is sensitive to pharmacological and non-pharmacological procedures which alter the experience of pain.23 Also, its application may vary across studies and may cause heterogeneity. The VAS scores could be influenced by such basic factors as how the use of a VAS is described to patients, when to record, administration of postoperative analgesic regimens; and whether the VAS score was recorded before or after analgesia was administered. Therefore, it is recommended that a more precise mode of study should be designed to record pain, in future studies.

Bleeding, in the immediate postoperative period, is almost always due to inadequate intra-operative haemostatic precautions. In this study, there was an insignificant difference of bleeding in both the groups in the early postoperative period and in the second week. When international studies were reviewed, intra-operative bleeding was significantly higher in patients undergoing stapled haemorrhoidectomy.12,21 Some other studies also showed a higher proportion of postoperative bleeding in open haemorrhoidectomy.14,24 Probably a difference in surgical technique could be an explanation for these results.

A postoperative wound infection was noticed in only one patient who underwent MMH. Contrary to this, Bikhchandani et al. found one patient of PPH with wound infection.16 It is not only due to surgery but some other factors may also be responsible for this complication. This was noticed in patients with large, prolapsed haemorrhoids. Probably, the raw area left after surgery was large leading to an increased susceptibility to infection. Also, sometimes, patients scared of wound in the peri-anal area do not take adequate hygienic measures leading to infection in that area.

A higher frequency of urinary retention was found in patients of MMH as compared to PPH, similar to other studies.8,24 However, Mehigan et al. found no difference in terms of urinary retention.20 Again, this can be due to severe pain over the large raw surface left after open haemorrhoidectomy. This also leads to an increased incidence of one of the recognised complications; i.e. urinary retention in such patients. Other complications like anal stenosis and fissure, incontinence, prolapse and re-occurrence etc. are late complications. No significant differences were noticed during the 2 weeks follow-up. Probably, long-term follow-up is required for these complications.

The patients of PPH had a shorter hospital stay leading to early return to work when compared with results of MMH. Similar results have been shown in other similar studies.12,15-17,25 The absence of symptoms as well as an improved appearance of the anal canal leads to a better psychological effect on these patients leading to satisfaction, and an early return to work. Moreover, stapled haemorrhoidectomy can be done as a day care procedure as supported by Nastro and Nisar.26,3

**CONCLUSION**

There were significant differences between MMH and PPH by virtue of postoperative pain and hospital stay.
However, the difference in the mean length of operative time was not statistically significant. Similarly, postoperative complications were less in the PPH group as compared to MMH.

However, this newer technique is still in the experimental process and therefore, needs more studies and a longer follow-up in order to replace the old traditional methods.

REFERENCES


