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**REVIEW ARTICLE**

# Observational Study of Outcome of Open Hemorrhoidectomy (Miligan Morgan's Technique) vs. Transanal Suture Hemorrhoidopexy (Chivate's Procedure)

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## Abstract

**Background**: The comparison of outcome of open hemorrhoidectomy vs transanal suture hemorrhoidopexy

**Aims & Objectives**: To evaluate and compare the outcome of open hemorrhoidectomy (Milligan Morgan`s technique) and transanal suture hemorrhoidopexy (Chivate`s procedure).

**Methodology**: Observational Retrospective and concurrent prospective cohort study utilizing 25 patients in two groups.

**Results**: Statistical Analysis suggest significant advantage of transanal suture hemorrhoidopexy over open hemorrhoidectomy.

**Keywords:** Hemorrhoides, open hemorrhoidectomy, suture hemorrhoidopexy, pain.

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## Introduction

Hemorrhoids, one of the most common pathology to be present at colorectal clinic among general population. Hemorrhoids are normal vascular cushions suspended in the submucosal layer of anal canal by longitudinal connective tissue and smooth muscle fibers [5]. Although hemorrhoids are normal structure, the term hemorrhoid (Hem-uh-rrhoids=swollen veins in your anus and lower rectum; similar to varicose veins) indicates a pathologic or symptomatic process [8].

Hemorrhoidal disease presents with the chief complains of more commonly bleeding, difficulty in defecation/constipation, prolong straining, soiling, and pruritus [2,3]. Constipation and Prolong Straining are widely believed to cause hemorrhoids because hard stool and increased intraabdominal pressure could cause obstruction of venous return, resulting in engorgement of hemorrhoidal plexus but recently diarrhea is also a risk factor for development of hemorrhoides [4].

To reduce constipation which is a main precipitating factor, is the main leading modification which relieves the complaints in many patients, if not all. This is done by dietary measures and bulk forming agents. Failure to the conservative life style modification measures will necessitate some form of operative intervention.

For years, hemorrhoidal excision was done which reduces the disease burden but it is associated with many complications and morbidity such as post-operative pain [6].

In 1998, Longo proposed the use of a specifically designed instrument, circular stapler for surgical treatment of grade III and IV hemorrhoids [7]. This surgery depends on shortening and fixing of prolapsed anal cushions to their original position above the dentate line, known as stapler hemorrhoidopexy. Modification of this technique using sutures was introduced by Dr Chivate which was termed as Transanal Suture Hemorrhoidopexy [19].

Our present study aims to provide evidence for the painless treatment for hemorrhoids and to compare and evaluate Open hemorrhoidectomy (Milligan Morgan`s technique) vs Transanal Suture hemorrhoidopexy (Chivate`s procedure) in providing effective procedure for hemorrhoids.

## Methodology

As this study is retrospective with concurrent prospective observational study, purposive sampling with collection of case sheets and papers from record room with permission from Medical Superintendent to get access to the case papers which were noted in case paper of the patients who were operated for hemorrhoid surgeries at tertiary care hospital of South Gujarat. With the follow up, post operative complications were noted.

### Inclusion Criteria

1. Patients who had undergone or will undergo operative intervention for 2nd degree, 3rd degree hemorrrhoids and 4th degree- prolapsed and edematous hemorrhoids
2. Patients 18-65 years

### Exclusion Criteria

1. Patients <18 or >65 years.
2. Immuno-compromised/comorbid patients.
3. Death of patients in post operative period due to systemic cause

### Outcome Parameters

To study immediate post operative complications i.e. Pain ( According to Wong Bakers Faces-WBF scale), Bleeding on discharge, pain, bleeding, discharge, fecal incontinence, fever, stricture (basis on the follow up), operative duration, hospital stay in both the surgeries i.e. Milligan Morgan`s open Hemorrhoidectomy and Chivate`s Transanal Suture Hemorrhoidopexy (At 1 month, subsequent follow up and 6 month interval)- all the details documented in haemorrhoid (perianal) surgeries at tertiary care hospital of South Gujarat.

**Technique [9,12]**

This method uses the specific operative proctoscope (Fig. 1), which is made up of a plastic (pvc=poly vinyl chloride) tube of 3.6 cm inner and 3.8 cm outer diameters; along with dual use handle for light source connected to fiber optic and for holding [9]. The handle of fiber optic is opposite to the slit for working area in anal canal. The proximal end of the tube is conical and smooth that closes the tube, which facilitates the introduction of the proctoscope and prevents fecal matter to enter in the operation field. Multiple modifications of Chivate`s proctoscope available in form of length and material too. In our study we used the same above mentioned plastic material - that has economical sterilization method and more length calibration, so hemorrhoidopexy can be done easily as well. Over the inner aspect of the scope, there are multiple calibrated markings at 1 cm interval. The operating scope retracts the anus and rectum to provide optimum space without over stretching.

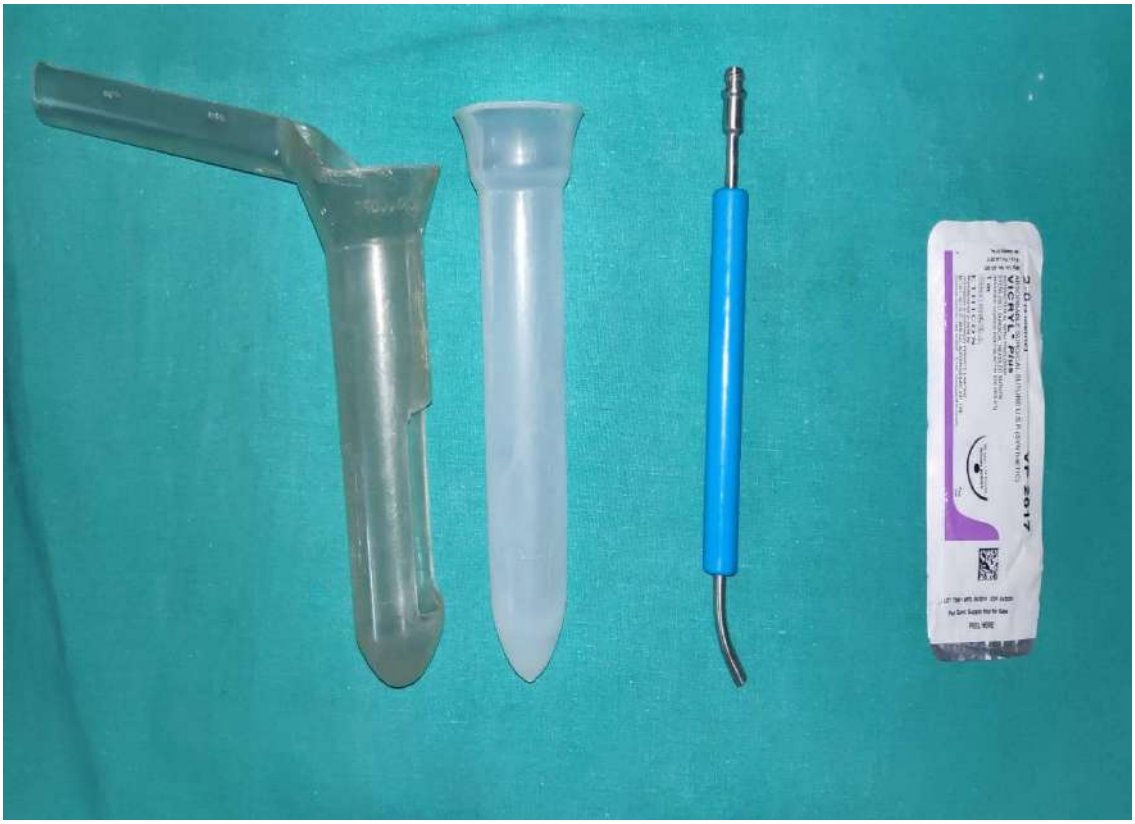

Fig. 1. Materials required for Chivate`s suture hemorrhoidopexy

We used metal malleable tongue depressor to depress the pile masses upwards. First anoscope is inserted and then anoscope along with operating proctoscope is inserted. Sliding anoscope is removed. Entire anal canal easily illuminated for the procedure. Using absorbable suture at 0.6-1 cm hemorrhoidopexy is performed.

The stitches are passed through the depth of the mucus-submucous and part of muscle, started at six o'clock position at a distance of 4 cm proximal to the dentate line. For the stitch a 2-0 polyglactin on round bodied 30 mm, 1 meter long ½ circle needle is used. Strict vigilance is required to prevent involvement of rectal wall. After the first knot, the next bite is started 1–2 mm next to the first knot, overlapping it 1-2 mm and is double locked, which is to avoid purse string effect. Circumferential suturing is done in similar manner. The last stitch is crossed over the first bite and then knotted. The second circumferential suture line is completed in a similar manner but above dentate line at 2 cm

distance. Due to visceral and autonomic nerve supply, little or no pain is perceived by the patient. (Fig. 2).

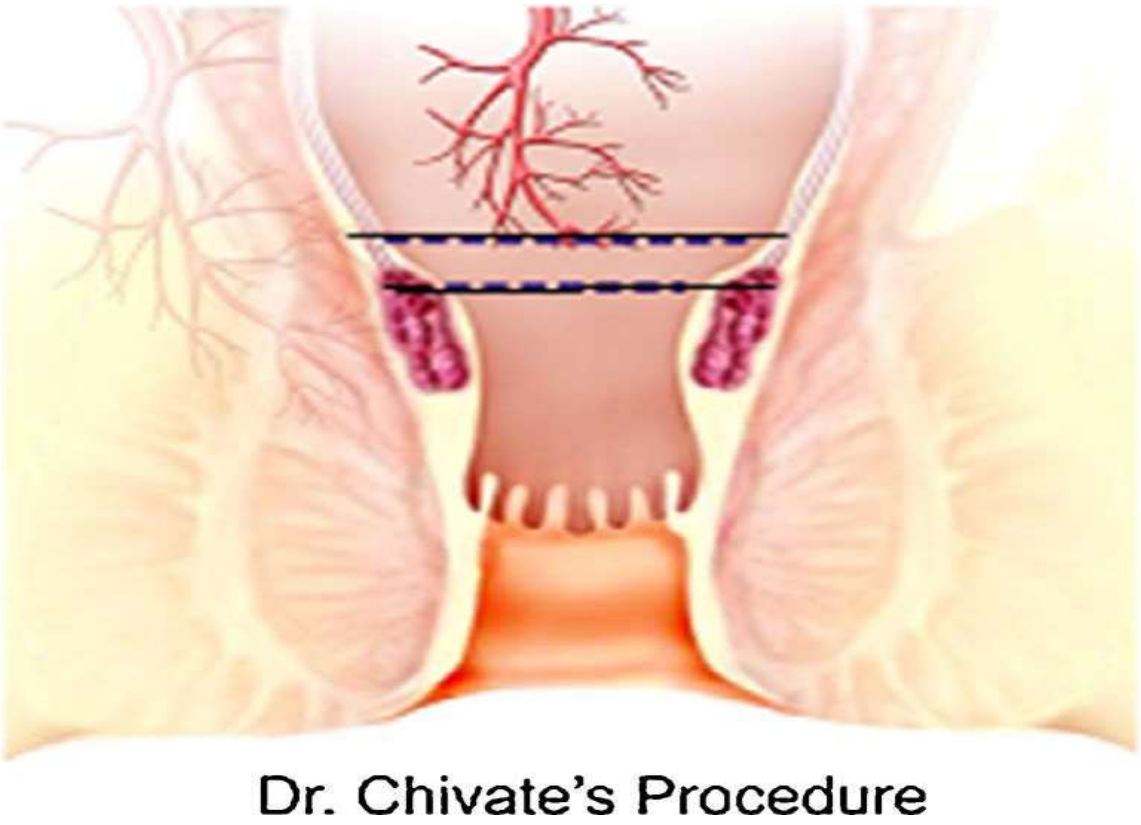


Fig. 2: Two cicumferential suture lines

**Results**

A sum of 50 patients for hemorrhoid surgery divided in equal groups in department of surgery, tertiary care hospital of South Gujarat were included in this study from July 2019 to August 2021. Statistical analysis was done using chi square test. For ease of description we use Group A as open hemorrhoidectomy (Milligan Morgan`s technique) and group B for transanal suture hemorrhoidopexy (Chivate`s Procedure) (Fig.4 & 5).

We observed that operative interval in 44% of group B took >35 mins in comparison to 20% in performing group A. P-value was 0.00086 stating that statistically it is significant.

For postoperative pain statistical analysis revealed that 12% incidence of postoperative pain that is >/=3 WBF pain score in group B and 68 % in group A(Fig.3) [11]. P value came out 0.00021 which is significant statistically. Statistics showed 12% incidence of postoperative bleeding in group B and 36 % in group A. P value came out 0.0473, suggestive of significant difference in both the groupsof significant difference in both the groups.

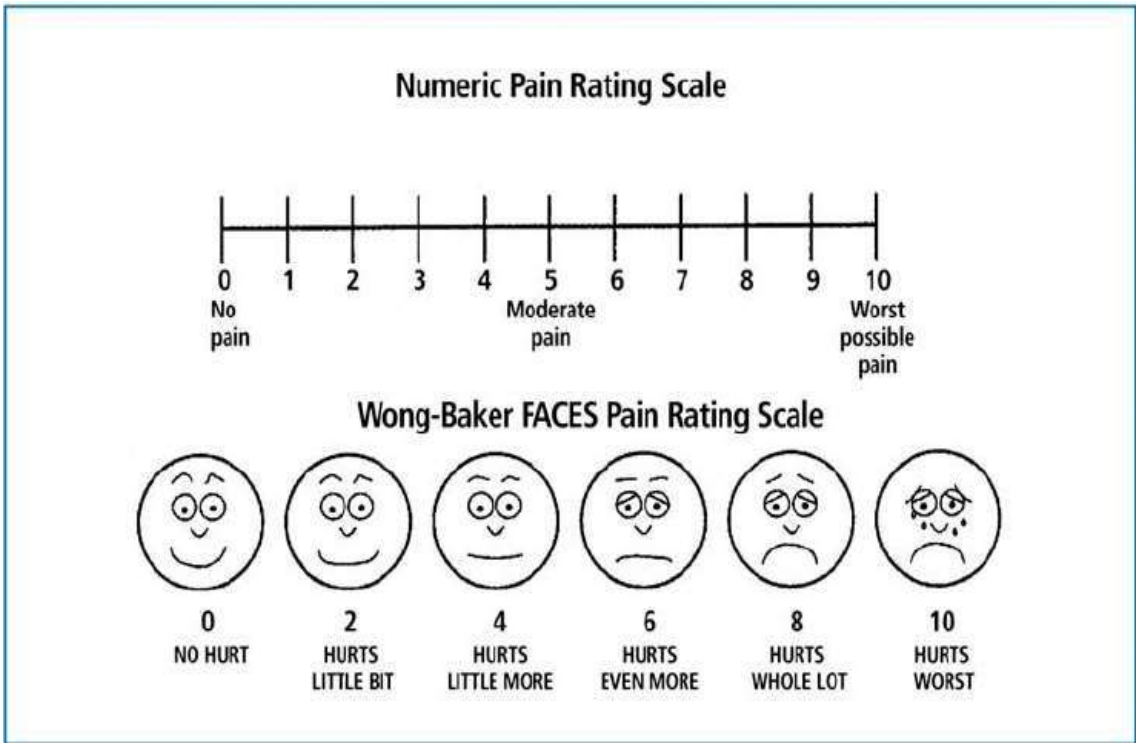


Fig. 3: WBF pain rating scale

On follow up assessment, pain persisted in 32% of patients and 28% had persistent bleeding in group A compared to 4% of patient had pain and bleeding in group B patients on 7th post operative day. From that, P value of 0.01034 and 0.0210 for pain and bleeding also signifies a difference in both the groups.

Many related local findings were noted at the follow up visit on day-7 of the patient which suggest that discharge was statistically not significant among both groups. Other findings by chi-square test revealed 16% incidence of fecal incontinence and 20% of patients developed anal stricture of group A. Whereas, group B had no such complain. Calculating P value came out for fecal incontinence and anal stricture were 0.037 and 0.01771 respectively, stating as significantly different.

Hospital in stay was studied and compared in the both the groups. Statistical analysis by chi-square test revealed 84% incidence of discharge <2 days and resumption of daily activities in group A and 24% in group A. P value of 0.035015 also suggested significant difference in the 2 groups statistically.

Recurrence at (follow up of) 28 days and on further visits (long term) ~6 month was studied and compared in both the groups. Statistical analysis using Chi-square test revealed that recurrence present in 4% in group B at each visit whereas in group A 20% and 25% at 2nd and 3rd visit respectively. P value came out to be 0.0823 and 0.009 respectively, which signifies the difference between 2 groups for the recurrence.

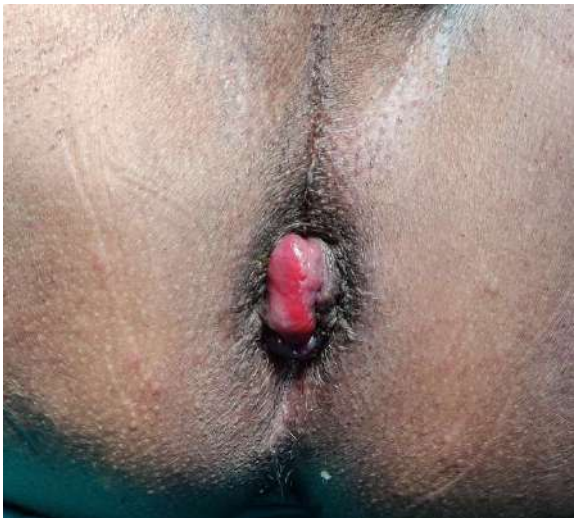

Fig. 4: Pre Operative

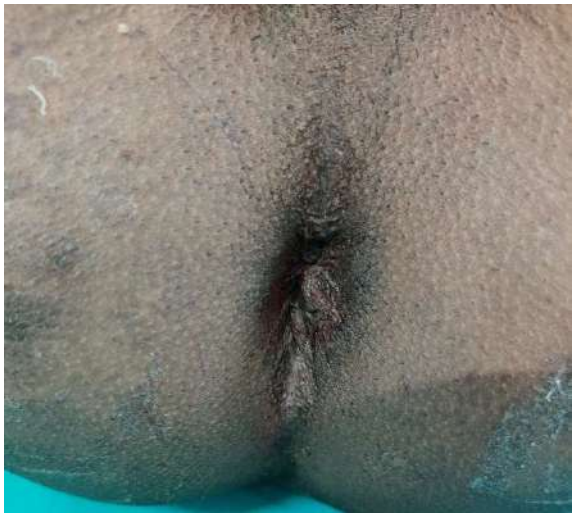

Fig. 5: Post Operative Day-7

**Discussion**

As we know, hemorrhoid is the persistent disease in the Indian subcontinent which needs to be treated to preserve daily life activity accordingly. According to the research which is extensively done in western regions recently such as LASER, Infrared coagulation which is not applicable widely on daily basis because of economical issues. Therefore, we considered studying conventional open hemorrhoidectomy (Milligan Morgan`s technique) and transanal suture hemorrhoidopexy (Chivate`s procedure), latter is again given by an Indian well renowned surgeon Dr. Chivate [9,10,12].

In our study, mean operative interval of surgery is 30 minutes in Group A and 35 minutes in Group B. This difference was statistically significant (P value 0.000086) which indicate that duration of time is more in hemorrhoidopexy. Open hemorrhoidectomy procedure requires less time for surgery. Mastakov et al found the similar result of mean operative interval of around 27.4 minutes for conventional open hemorrhoidectomy group on 27 patients [13]. Longer operative duration in suture hemorrhoidopexy patients can be attributable to the adaptation of surgeon to the new technique and longer learning curve for the new surgeon to perform this surgery.

In our study, immediate postoperative pain was prophylactically dealt by this study [13]. Pain was assessed using a Wong Baker Faces rating scale (WBF). Using the adequate analgesia for pain management, according to world health organization (WHO) guidelines our aim was to keep the WBF score below 3. Analgesia administered on the basis of WBF scale [14]. In our study, postoperative pain (WBS scale >/=3) incidence was 68% in Group A and only 12% in Group B. (P value 0.00021). Thus, Chivate`s hemorrhoidopexy is better for postoperative pain than Milligan Morgan`s technique. Adil Shaker study (2018) for 190 patients, in which 80.1 % patients had pain postoperatively [15]. Both the suture lines are above the dentate line, pain is reduced drastically due to no somatic sensation in this area in hemorrhoidopexy [16]. Postoperative pain is the major drawback in hemorrhoidectomy. Because of above reasons Chivate`s hemorrhoidopexy is becoming widely acceptable procedure due to less patient discomfort.

Postoperative bleeding was statistically analysed which showed 12% incidence of bleeding in hemorrhoidopexy as compared to 36% in hemorrhoidectomy (p value 0.0473). To note, in this study, bleeding was assessed by subjective method, based on patient`s complaints. Thus, chivate`s procedure is better

in terms of intraoperative and postoperative bleeding than open hemorrhoidectomy. In Milligan Morgan`s hemorrhoidectomy, the bleeding is due to early separation of the ligated pedicle before adequate thrombosis in the feeding artery can occur [17]. It needs to be controlled either by returning to theatre for suture ligation or at bedside by anal packing or tamponade effect by folley`s catheter. This complication is least encountered in suture hemorrhoidopexy. adil saker study, observed 56 % incidence of postoperative bleeding in hemorrhoidectomy group which is comparable to our study [15].

Hospital in stay was studied and statistical analysis was done. With reference to patients discharged in 2 days, 24% were discharged in Group A and 84% patients in Group B. Calculated P value was 0.035015. Chivate`s hemorrhoidopexy requires lesser hospital in stay compared to hemorrhoidectomy and thus patient can return to daily work earlier. Dr Chivate undertook a study in which, it was observed that open hemorrhoidectomy is very painful requiring 3-5 days hospital in stay. Due to less pain post operatively hemorrhoidopexy needs less hospital in stay [19]. Another study with comparable results, Neeralagi CS et al (2017), in 120 patients found that the mean hospital in stay for hemorrhoidectomy is 4.1 days [18].

Recurrence at follow up was studied, revealed that 6.67 % patients had recurrence in patients who underwent open hemorrhoidectomy against 40% in patients who underwent suture hemorrhoidopexy. Statistics signified it with P value 0.002271. To state, Chivate`s procedure is better in outcome compared to Milligan Morgan`s surgery as there is less recurrence and better satisfaction of patient in this regard. Hemorrhoidectomy is based on the principle of minimization of loss of skin and the mucosa of the anal canal that bridges between the two excised hemorrhoids to prevent stricture. Haemorrhoidal arterial ligation (HAL) is done to occlude blood supply. But afterwards, the smaller feeders, as collaterals forms, which is summarized as to be the potential cause of the recurrence of 18-25 %. In contrast to this, in hemorrhoidopexy, circumferential blockage at two sites the distance of 2 cm, decreases the development of the collaterals and so as recurrence. Another theory for recurrence in hemorrhoidopexy group, is supposed to be due to inadequate suture bite at appropriate depth (inadequate hemorrhoidopexy) [19]. Sakr et al (2009) total 45 patients hemorrhoidectomy concluded the recurrence rate of 9.16 % [20]. Similarly in terms of recurrence Kim et al had 24 % incidence [21]. We need higher number of patients to study and compare in both the groups to provide acceptable results on larger basis. It is advisable to perform the study for longer duration (in years).

## Conclusion

To conclude, transanal suture hemorrhoidopexy (Chivate`s procedure) resulted in less post operative bleeding, lesser pain, decreased requirement of analgesia, earlier ambulation, with easier and sooner return to daily life with minimal secondary complications in forms of anal stricture and bleeding with improvable operative time, decreased hospital in stay, compared to hemorrhoidectomy (Milligan Morgan`s technique). Thus, Chivate`s hemorrhoidopexy can be recommended as a safer and better alternative surgery than Milligan Morgan`s open surgery after adequate training.

## Recommendation

We need higher number of patients to study and compare in both the groups to provide acceptable results on larger basis. It is advisable to perform the study with longer follow up (in years)..

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## Conflicts of interest

The authors declares that they do not have conflict of interest.

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