

To Compare the Cost Effectiveness of Stoppa's Preperitoneal Hernioplasty and Laparoscopic TAPP for Inguinal Hernia Surgeries in Rural Tertiary Care Hospital in India

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Original Research Article

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Article History

Received: 16.02.2018

Accepted: 26.02.2018

Published: 30.03.2018

DOI:

10.36347/sjams.2018.v06i03.049



Abstract: The subject of repair of inguinal hernia has been full of controversy ever since Eduardo Bassini of Padua University described his method of repair in the manuscript 'Radical Cure of Inguinal Hernias' way back in 1887. In 1984, Lichtenstein et al coined the term "Tension-Free Hernioplasty" and broke the convention by advocating routine use of mesh for hernia repair, thereby making tissue repair a thing of the past. Real controversy started in 1990, when laparoscopic Tension-Free repair came in to vogue and was routinely advocated and aggressively marketed by promising less pain and shorter recovery period, but the things in the small prints were completely ignored. Prospective type of study was carried out in Surgery department on 47 cases, among which 28 undergone Stoppa's surgery and 19 undergone laparoscopic TAPP. Both types of surgeries were compared and cost effectiveness procedure was identified. Bleeding time, complications etc were compared. SPSS Software was used for statistical analysis. Mean days of hospital stay among Stoppa's cases was 4 days and among lap TAPP was 3 days. Time required for Stoppa's was less than TAPP. Stoppa's was cost effective as compared to TAPP. Laparoscopic hernia repair is more costly; difficult to learn with a steep learning curve, carries the risk of serious visceral and or vascular injuries and blood loss. Surgery time is also more for laparoscopic repair as compared to Stoppa's repair.

Keywords: Stoppa's, TAPP, hernia. Inguinal repair.

INTRODUCTION

The subject of repair of inguinal hernia has been full of controversy ever since Eduardo Bassini of Padua University described his method of repair in the manuscript 'Radical Cure of Inguinal Hernias' way back in 1887. The fact that more than a hundred repairs have been described for inguinal hernia and practiced at some time or the other over the past century are a testimony to the fact that none has been considered distinctly superior to the others. In recent years, however, the use of mesh for repair of inguinal hernia has become a norm [1].

The laparoscopic repair of inguinal hernia, a relatively newer modality in the armamentarium of the surgeon, has been around only for a little over a decade [1]. Nyhus and Stoppa developed the concept of preperitoneal repair of inguinal hernia in an effort to reduce the high recurrence rates associated with the anterior repairs popular around that time - most of which in fact were tissue, as against, prosthetic repairs [2].

The Stoppa procedure, or giant prosthetic reinforcement of the visceral sac (GPRVS), is performed by wrapping the lower part of the parietal peritoneum with prosthetic mesh. The mesh contributes to a physiological healing process that creates a special bilateral anatomical reinforcement in the inguinal region, which effectively prevents inguinal hernia recurrence [2].

Inguinal hernias have been treated traditionally with open methods of herniorrhaphy or hernioplasty. But the trends have changed in the last decade with the introduction of minimal access surgery [3]. The preperitoneal approach for inguinal hernia avoids distorting the inguinal anatomy, markedly reducing the risk of damage to the vessels and permits inspection of all potential groin hernia sites [4].

In 1984, Lichtenstein et al coined the term "Tension-Free Hernioplasty" and broke the convention by advocating routine use of mesh for hernia repair, thereby making tissue repair a thing of the past. Real

controversy started in 1990, when laparoscopic Tension-Free repair came in to vogue and was routinely advocated and aggressively marketed by promising less pain and shorter recovery period, but the things in the small prints were completely ignored [5].

Present study was carried out to study the cost effectiveness between laparoscopic TAPP and open Stoppa's surgery.

Aim

To compare the cost effectiveness of Stoppa's preperitoneal hernioplasty and Laparoscopic TAPP for inguinal hernia surgeries in rural tertiary care hospital in India

Objective

- To find the cost of both surgeries.
- Complication related to both surgeries
- Surgery time needed for both the studies.
- Recommendations

MATERIALS AND METHODS

Present study was a prospective study carried out in the department of Surgery, in tertiary care hospital, rural area of Maharashtra, India. Total 47 patients were included in the study. All 47 patients underwent inguinal hernia repair surgery.

Inclusion Criteria

- Study included only males,
- Having no other associated disease.

Exclusion Criteria

- Patients needing emergency surgery
- Not willing to participate

Two groups were formed among the cases. First group included cases undergoing inguinal hernia repair by Stoppa's Surgery and second group included cases undergoing inguinal hernia repair by Laproscopic TAPP. First group had total 28 patients and second group had 19 patients.

Study was carried out for a period of 1 year. Patients were followed up in the OPD of surgery department. Cost effectiveness was compared between both the studies. Other factors were also compared, like, complications, blood loss, surgery time etc.

RESULTS

First group: Stoppa's was carried out in 28 patients

Second group: Laparoscopic TAPP was done in 19 patients

Table-1: Site involved for the surgery

Site	Stoppa's	TAPP	Total
Unilateral	0	15	15
Bilateral	28	4	32
Total	28	19	47

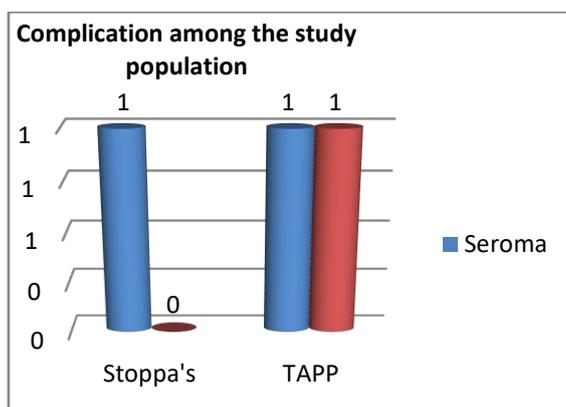


Fig-1: Complication among the study population

Table-2: Hospital stay required among the study population

Stay in Days	Stoppa's	TAPP	Total
<3 days	5	17	22
> 3days	23	2	25
Total	28	19	47

Mean days of hospital stay required for Stoppa's surgery was 4±2.1 days

Mean days of hospital stay required for TAPP surgery was 3±1 days

Applying t test, p value= 0.03, shows statistical significance.

Table-3: Surgery time needed

Time in minutes	Stoppa's	TAPP	Total
<60 min	27	1	28
>60 min	1	18	19
Total	28	19	47

Mean time required for Stoppa's surgery was 40 ± 10 min
 Mean time required for TAPP surgery was 90 ± 12.3 min.
 Applying t test, p value= <0.0001, shows statistical significance.

Table-4: Cost required for the surgery

Cost in thousands	Stoppa's	TAPP	Total
≤10	26	1	27
>10	2	18	20
Total	28	19	47

Mean cost required for Stoppa's surgery was Rs 9000 ± 2000
 Mean cost required for TAPP surgery was Rs 27000 ± 5000
 Applying 't' test, p=<0.000001, shows high significance.

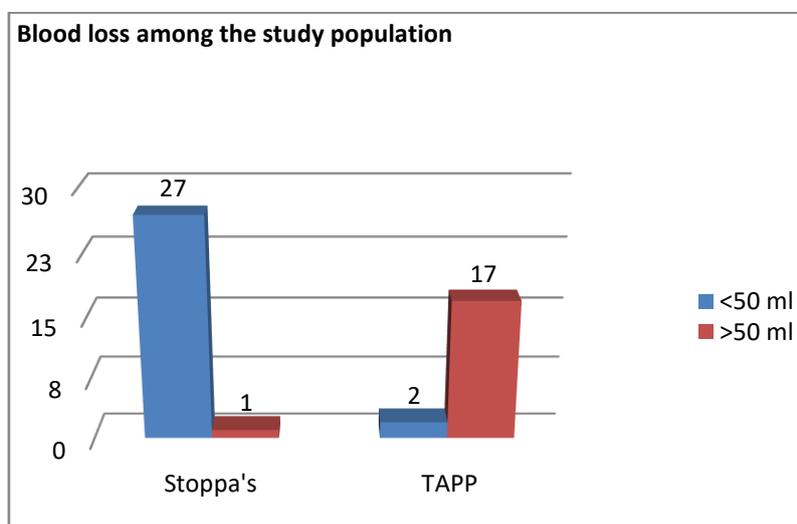


Fig-2: Blood loss among the study population

Mean blood loss among Stoppa's patient was 18 ± 4.5 ml
 Mean blood loss among TAPP patients was 90 ± 20 ml.
 Applying 't' test, p=<0.000001, shows high statistical significance.

DISCUSSION

In the present study all patients were male, in Stoppa's surgery all surgeries were unilateral whereas among TAPP surgery 15 were unilateral and 04 were bilateral. It was also seen that among patients operated by Stoppa's had only seroma as complication, whereas among TAPP one had seroma and one had port site bleeding. Mean hospital stay in days was more in Stoppa's as compared to TAPP surgery. Mean surgery time needed for Stoppa's was less as compared to TAPP surgery. Cost needed for Stoppa's surgery was less as compared to TAPP surgery. Anesthesia needed for Stoppa's was Spinal Anesthesia and for TAPP was General anesthesia. Blood loss was less in Stoppa's as compared to TAPP surgery. It was also seen that among

the Stoppa's surgery patients Foley's catheter was not needed postoperatively whereas among TAPP surgery patients Foley's catheter was used. It was also seen that patient acceptance was good in Stoppa's surgery as compared to TAPP surgery.

Study by Mahran Km *et al.* [4] showed that operative time was 110 ± 65 min in TAPP group and 90 ± 20 min in Stoppa group. Hospital stay and need for analgesics were less with TAPP group than Stoppa group. Study by Anadol ZA *et al.* [6] showed that laparoscopic hernia repair was significantly more expensive than open (1100 US dollars versus 629 US dollars).

Table-5: Comparing operating time

First Author	Laparoscopic	Open
MC Cormack [8]	14.8 minute longer (p < 0.0001)	
Memon [9]	15.2 minute longer (p < 0.0001)	
MRC Trial group [10]	58.4 minute	43.3 minute
Bringman [11]	50 minute	45 minute
Picchio [12]	49.6 minute	33.9 minute
Chung [13]	Laparoscopic longer in all groups	
Wright [14]	58 minutes	45 minutes
Present study	90±12.3min	40±10 min

Table-6: Cost comparison

First Author	Laparoscopic	Open
MRC Trial group [10]	314 more pound	less
Anderson [15]	\$1091 higher	less
Johansson Bo [7]	7063 SEK	417 SEK
Wellwood [16]	\$505 more	less
Heikkine [17]	\$ 446 more	less
Present Study	Rs 27000 ± 5000	Rs 9000 ± 2000

Study by Johansson Bo *et al.* [7] Showed that the TAPP procedure was more expensive, mainly as a result of longer surgical time and equipment costs, Complications were more common in the TAPP group, with a varying pattern between the groups.

CONCLUSION

Laparoscopic hernia repair is more costly; difficult to learn with a steep learning curve, carries the risk of serious visceral and or vascular injuries and blood loss. Surgery time is also more for laparoscopic repair as compared to Stoppa’s repair.

RECOMMENDATIONS

Stoppa’s repair is the best surgery for rural area as it is cost effective.

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