



6-1-2023

Section: Pediatrics & its Subspecialty., General Surgery, Endo-surgery

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How to Cite This Article

Ibrahim, Mohammed K.; Ghalwash, Eslam T.; and El-Azeem, Ahmed R. Abd (2023) "Bilateral Inguinal Hernia Repair Comparative Study Between the Laparoscopic Total Extraperitoneal (TAPP) and Stoppa Approaches," *Al-Azhar International Medical Journal*: Vol. 4: Iss. 6, Article 31.

DOI: <https://doi.org/10.58675/2682-339X.1850>

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Bilateral Inguinal Hernia Repair Comparative Study Between the Laparoscopic Total Extraperitoneal (TAPP) and STOPPA Approaches

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Abstract

Background: A special entity among inguinal hernias is represented by bilateral hernia. The optimal surgical approach must be selected individually for the patient, taking into account the patient age, hernia size, primary or recurrent status, type of anesthesia, occupation, and patient activities.

Aim: To evaluate and compare bilateral-inguinal-hernia in management STOPPA & laparoscopic (TAPP) approaches.

Patients and methods: Thirty (30) patients presented in the outpatient clinics complaining of bilateral inguinal hernia were randomly divide; Group I 15 patients for TAPP repair and Group II 15 patients for STOPPA repair which was done at Al-Azhar University Hospitals and Shebin El-Koum Teaching Hospital over a period from February 2021 to October 2022.

Results: Our results revealed that; nonsignificant difference between both groups as regarding age, postoperative complications; hospital stay, no wound infection with TAPP, while there were one case of wound infection with STOPPA, postoperative recurrence and one case recurrence with TAPP. TAPP technique takes shorter duration than STOPPA technique.

Conclusion: TAPP approaches were observed that low of surgical trauma with better outcomes in comparison to STOPPA approach with high complication rate and high incidence of surgical trauma.

Keywords: Bilateral inguinal hernia, Laporoscopic, STOPPA, TAPP

1. Introduction

Previous studies on inguinal hernias have been published were focused specifically on bilateral inguinal hernias, and reported findings are often described in conjunction with those of unilateral or recurrent hernias.¹ It is evaluated that between eight percent and thirty percent among hernia patients have a bilateral-hernia which demonstrates a specific type of hernia or two different hernias in the same patient.¹

The different types of hernias do not refer to any specific category of bilateral hernias.² Studies have shown that tension-free mesh techniques are preferred because they cause less pain and lead to fewer recurrences after surgery.³

Recently, recommendation for the management of bilateral-inguinal-hernias to the repairing among both sides through surgery, anesthetic procedures use of a sling or preperitoneal stent.⁴

STOPPA approaches the preperitoneal stent were used through the sub-umbilical mid-line or sleeve incision.⁵

Laparoscopic inguinal-hernia repair discovered for 20 years before, however, still understood. Laparoscopic inguinal-hernia repair had many factors, including benefits for the patients, high-cost laparoscopic approach as a standard procedure for all patients.⁶

Two alternative methods have been improved and are commonly used: *trans*-abdominal preperitoneal (TAPP) and total incremental peritoneal (TEP).

Accepted 25 December 2022.
Available online 20 November 2023

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<https://doi.org/10.58675/2682-339X.1850>

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Table 1. Difference between the two groups regarding age.

Method	Method		Mann–Whitney Test	P value
	Group I N = 15 Mean ± SD	Group II N = 15 Mean ± SD		
Age (years)	35.45 ± 13.57	43.15 ± 11.08	1.200	0.238

TAPP and TEP techniques use larger meshes than the open anterior approach to strengthen the abdominal wall in the groin and to segment spermatic cord structures.⁷

Therefore; this study purposes to evaluate and compare bilateral-inguinal-hernia in the management STOPPA & laparoscopic (TAPP) approaches.

2. Patients and methods

In this study, Thirty (30) patients presented in the outpatient clinics complaining of bilateral inguinal hernia were randomly divide; Group I 15 patients for TAPP repair and Group II 15 patients for STOPPA repair which was done at Al-Azhar University Hospitals and Shebin El-Koum Teaching Hospital over a period from February 2021 to October 2022.

Men ≥ 18 years old, fit for surgery with bilateral primary uncomplicated inguinal hernia were included criteria. Women, Men < 18 years old, unfit for surgery with the systemic disease as (liver disease and anaemia who were immunocompromised), complicated inguinal hernias (infection irreducible, obstruction, strangulated), unilateral inguinal, Recurrent hernia patient were excluded from the study.

Basic investigations were done to obtain to confirm diagnosis and fitness for surgery. This include random-blood-sugar, blood urea, creatinine, ECG, complete blood picture, viral marker prothrombin time test (PT), Partial thromboplastin time (PTT), chest-radiograph, C - reactive protein (CRP), haemoglobin level, haematocrit level, and leukocytes/mm³.

All laparoscopic surgery were conducted under general anesthesia and sotppa group under spinal anesthesia.

Outpatient follow-up we are scheduled at 1 week. 3 weeks, 1-months and 6-month after surgery with close observation of postoperative pain complication as bleeding recurrence rate up to 6 months.

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 12, SPSS Inc. USA). P value is significant if less than 0.05.

3. Results

In patients who underwent bilateral inguinal hernia repair by TAPP, the mean age was 35.45 years, the mean operative time was 82.41 min, the hospital stay was one day in all cases, with one recurrent case and they returned to work after 15 ± 5 days.

In patients who underwent bilateral inguinal hernia repair by STOPPA, the mean age was 43.15 years, the mean operative time was 103.36 min, the hospital stay ranged from 1 to 2 days, they returned to work after 25 ± 5 days.

In this study the difference between the two groups regarding:

Postoperative recurrence was statistically insignificant, as one recurrent case in group I (5%), no cases of recurrence in group II recurrence occur in group I may be due to mesh migration or not fixing the mesh good.

In this study postoperative wound infection in STOPPA recorded one case but no case in group I (Tables 1–6).

4. Discussion

The laparoscopic operations caused significantly less pain in the early postoperative period, leading to earlier mobilization and earlier return to work and less operative time than open mesh repair. This was clearly seen in the manual workers undergoing laparoscopic operation.⁸

Therefore; this study purposes to evaluate and compare STOPPA & laparoscopic (TAPP) in the management of bilateral inguinal hernia.

As per previous studies observed that large mesh were overlaying myopectineal orifice with the efficient to over manipulation of two small mesh which

Table 2. Difference between the two groups regarding operative time.

Method	Method		Mann-Whitney Test	P value
	Group I N = 15 Mean ± SD	Group II N = 15 Mean ± SD		
operative time (in minutes)	15.3 ± 82.41	103.36 ± 22.4	0.45	0.68

Table 3. Difference between the two groups regarding post-operative pain.

Method	Method		χ^2	P value
	Group I N = 15 N (%)	Group II N = 15 N (%)		
post-operative				
Severe	0 (0)	2 (13.3)	9.45	0.00
mild	2 (13.3)	6 (40)		
No	13 (86.7)	7 (46.7)		

reducing the recurrence near the pubis as described by **Berndsen et al.**⁹

Mesh fixation to the pectineal ligament followed the standard methodology applied through the performed laparoscopic-hernia-repair as mentioned by **Stoppa et al.**⁶

Intra-abdominal pressure can hold the mesh in place, when a large piece of mesh is used (at least 10 cm × 15 cm) and placed without any wrinkles between the tissue layers and when the mesh covers all the hernia defect.⁹

Our study; regard the age, in (group A) the age ranged from (18–55) years old with the mean was (35.45 ± 13.57) while in (group B) the age ranged from (24–59) years old with the mean was (43.15 ± 11.08). There were nonsignificantly differences between group I and group II and these results agreed with the result of **Khajanchee et al.**¹⁰ and the results of **Fitzgibbons RJ, and Forse.**¹¹ In this study, the difference between the two groups regarding gender was statistically insignificant.

In our study, we found the average time of surgery was about 80 min in the group I, around 100 min in the group II, the operative time is longer in group II this difference was statistically insignificant and in agreement with **Lau et al.**¹² who mentioned that operative duration for bilateral laparoscopic TAPP inguinal hernioplasty was about 80 min.

In our study, regarding postoperative wound infection; There were no cases of wound infection in group I otherwise there were one case of wound infection with group II these results agree with **Mark et al.**¹³ that postoperative wound infection is more in STOPPA than TAPP.

Table 4. Difference between the two groups regarding postoperative hospital stay.

Method	Method		χ^2	P value
	Group I N = 15 N (%)	Group II N = 15 N (%)		
Hospital stay				
One day	15 (100)	13 (86.7)	3.24	0.07
More than one day	0 (0%)	2 (13.3)		

Table 5. Difference between the two groups regarding postoperative wound infection.

Method	Method		χ^2	P value
	Group I N = 15 N (%)	Group II N = 15 N (%)		
Wound infection:				
(no)	15 (100)	14 (93.3)	1.53	0.71
Yes	0 (0)	1 (6.7)		

Table 6. Difference between the two groups regarding postoperative recurrence: (recurrence occurs after about 3 months).

Method	Method		χ^2	P value
	Group I N = 15 N (%)	Group II N = 15 N (%)		
Post-operative recurrence				
Yes	1 (6.7)	0 (0)	3.8	1.7
No	14 (93.3)	15 (100)		

In this study; nonsignificantly difference between group I and group II regarding postoperative hospital stay but in group I no cases are stayed more than one day (0%) and in group II two cases are stayed more than one day (13.3%) as they complaining of scrotal edema and groin pain. These results agree with **Haque et al.**¹⁴ that demonstrates nonsignificant difference among TAPP and STOPPA two approaches.

In this study the difference between group I and group II regarding postoperative recurrence was statistically insignificant, as one recurrent case in group-(I), no recurrent in group-(II), recurrence occur in group-(I) may be due to mesh migration or not fixing the mesh this is agree with group I (6.7%) in which mesh was not fixed good in line with other previous study.¹⁵

In this study, the differences between group I and group II regarding postoperative pain statistically significant matching with **Poobalan et al.**¹⁶ result, who reported that post-operative pain is less in TAPP when compared to STOPPA.

4.1. Conclusion

The comparative study between the Stoppa and laparoscopic approaches for the bilateral inguinal hernia repair demonstrated the following: TAPP approaches were observed that low of surgical trauma with better outcomes in comparison to STOPPA approaches with high complication rate and high incidence of surgical trauma.

Disclosure

The authors have no financial interest to declare in relation to the content of this article.

Authorship

All authors have a substantial contribution to the article.

Sources of funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest

There are no conflicts of interest.

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