ISSN: 0975-3583,0976-2833 VOL13,ISSUE05,2022

TESTICULAR PERFUSION AND FERTILITY EFFECT IN PATIENT UNDERGOING LICHTENSTEIN INGUINAL HERNIOPLASTY: A PROSPECTIVE STUDY DEPARTMENT OF GENERAL SURGERY, MKCG MCH.

[1]Sworupa Nanda Mallick, [2]Swapna Mahapatra, [3]Amita Patnaik,[4]Lachhaman Bag*, [5]Narendra Nath Swain, [6]Suvendhu Amitav

[1]Assistant Professor, Department of General Surgery MKCG Medical College, Berhampur, Odisha, India.

[2]Assistant Professor, Department of Pharmacology. MKCG Medical College, Berhampur, Odisha, India.

[3]Assistant Professor, Department of Community Medicine, MKCG Medical College, Berhampur, Odisha, India.

[4*]Assistant Professor, Department of General Surgery, PRM Medical College, Baripada, Odisha, India.

[5]Professor, Department of General Surgery, MKCG Medical College, Berhampur, Odisha, India.

[6]Senior Resident, Department of General Surgery MKCG Medical College, Berhampur, Odisha, India.

Corresponding Author: Lachhaman Bag

ABSTRACT:

Introduction: Lichtenstein tension-free hernia repair using synthetic meshes are a well-accepted practice. Direct contact of the mesh to the vessels in the inguinal canal and perimesh fibrosis may have a negative impact on testicular flow.

Aim: To evaluate the effect of Lichtenstein inguinal hernia repair on male fertility by analysing testicular perfusion and volume, semen analysis.

Materials and methods: This prospective study was conducted in Department of General Surgery, MKCG Medical College and Hospital, Berhampur over a period of 24 months from July 2019- June 2021, a total number of 68 men were operated for primary inguinal hernia at General Surgery Department M.K.C.G Medical college Berhampur, Odisha, India and followed up for a period for 6 months. Testicular perfusion and volume were determined by measuring the blood flow velocity (cm/s) by colour Doppler ultrasonography (CDUS) and grey-scale while fertility is assessed by semen volume, concentration, motility, or pH. The data was evaluated and statistically analysed using IBM® SPSS® 23.0, for Windows®, to bring out the results of the study.

Results: In our study there was no major difference in testicular blood flow or testicular blood volume were found.

Conclusion: our study suggest that there no pertinent long term effect of hernioplasty on testicular perfusion and fertility.

Keywords: Lichtenstein hernia repair, Hernioplasty, Testicular perfusion.

INTRODUCTION:

About 10% of individuals develop some sort of hernia during their lifetime. It is seven times more common in males than in females. [1]

Spermatic cord anatomy is well studied due to its important role in testicular physiology and surgery. The spermatic cord consists of the vas deferens, testicular vessels including testicular

ISSN: 0975-3583,0976-2833 VOL13,ISSUE05,2022

artery and veins, autonomous nerves, spermatic muscle and fascia. Each of these structures may have different effects on testicular perfusion. [2]

While some studies showed that tension-free hernia repair has reduced recurrence, but associated with complications like fibrosis, ischemic orchitis, testicular atrophy, and prolonged pain and sexual dysfunction. The incidence of ischemic orchitis and testicular atrophy after Lichtenstein tension free inguinal hernia has been reported as 0.1% to 2%. [3, 4]

The effect of the hernia and hernioplasty on testicular perfusion and function isunknown.

OBJECTIVE: To evaluate the effect of Lichtenstein inguinal hernia repair on male fertility by analysing testicular perfusion and volume, semen analysis.

MATERIALS AND METHODS: This prospective study was conducted in Department of General Surgery, MKCG Medical College and Hospital, Berhampur over a period of 24 months from July 2019- June 2021, a total number of 68 men were operated for primary inguinal hernia at General Surgery Department M.K.C.G Medical college Berhampur, Odisha, India and followed up for a period for 6 months. Testicular perfusion and volume were determined by measuring the blood flow velocity (cm/s) by colour Doppler ultrasonography (CDUS) and grey-scale while fertility is assessed by semen volume, concentration, motility, or pH.

Inclusion criteria:

All cases of inguinal hernia aged between 18years to 70years were included**.**

Exclusion criteria:

Patients lost to follow up.

Ethical clearance: The present study was approved by the institutional Ethical Committee of M.K.C.G Medical College and Hospital, Berhampur, on human subject research.

RESULTS:

Table 1 :TESTICULAR PERFUSION AND OTHER RELATED PARAMETER

Preoperative Postoperative	P value		
Testicular volume (cm3)	12.6± 3.2	10.2 ±2.8	Not significant
Peak systolic velocity	0.020± 0.12	0.022 ±0.06	Not significant
Testicular perfusion (cm/sec)	10.4± 1.2	10.9 ±1.8	Not significant
End diastolic velocity	1.3± 03	2.8 ±0.2	Not significant
Acceleration time	68.3 ±12.2	64.4± 14.2	significant

Table 2: FERTILITY PARAMETER (SEMEN ANALYSIS)

Preoperative Postoperative	P value		
Volume (mL)	2.4± 0.4	2.2± 0.2	Not significant
Motility (% progression)	34± 6	32 ±6	significant
Concentration(106 cells/mL)	41 ±2	36± 2	Not significant
pH (mol/L)	7.4± 0.2	7.8± 0.5	Not significant

ISSN: 0975-3583,0976-2833 VOL13,ISSUE05,2022

DISCUSSION:

In inguinal hernioplasty the internal ring is closed with a suture or with a polypropylene mesh. It is a matter of concern whether or not the spermatic cord structures are compromised with these techniques. [5, 6, 7]Uzzo et al, in their study observed no significant differences regarding testicular volume, temperature, blood flow, and vasograms between the operation groups and preoperative and postoperative results, respectively. [8]In the study performed by Shin et al and Peiper et al showed that a dense fibroblastic response encompassing the polypropylene mesh with either trapped or obliterated the testicular vessels and vas deferens. [9, 10, 11]In our study there was no major difference in testicular blood flow or testicular blood volume were found.

CONCLUSION:

Our study suggest that thereare no pertinent long term effect of hernioplasty on testicular perfusion and fertility.

Funding:

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

Conflict of interest:

There are no conflicts of interest to declare by any of the authors of this study.

REFERENCES:

1. Abramson JH, Gofin J, Hopp C, Makler A, Epstein LM (1978) The epidemiology of inguinal hernia. A survey in western Jerusalem. J Epidemiol Community Health 27:300
2. Brooks JD. Anatomy of the lower urinary tract and male genitalia. In: Wein AJ, editor. *Campbell-Walsh Urology.* 9. China: Saunders Elsevier; 2007. pp. 38–77.
3. Zieren J, Beyersdorff D, Beier KM, Müller JM. Sexual function and testicular perfusion after inguinal hernia repair with mesh. Am J Surg 2001;181:204–6.
4. Condon RE. Groin pain after hernia repair. Ann Surg 2001;233:8.
5. Kingsley D, Vogt DM, Nelson T, Curet MJ, Pitcher DE (1998) Laparoscopicintraperitonealonlay inguinal herniorrhaphy. Am J Surg 176:548–553
6. Koksal N, Altinli E, Sumer A, Celik A, Onur E, Demir K, Sumer H, Kus D (2010)Impact of herniorraphy technique on testicular perfusion: results of aprospective study. SurgLaparoscEndoscPercutan Tech 20(3):186–189
7. Lee SL, DuBois JJ, Rishi M (2000) Testicular damage after surgical groinexploration for elective herniorrhaphy. J PediatrSurg 35(2):327–330
8. Uzzo RG, Lemack GE, Morissey KP, Goldstein M. The effects of mesh bioprothesis on the spermatic cord structures: a preliminary report in a canine model. J Urol1999;161:1344–9.
9. Shin D, Lipshultz LI, Goldstein M, Barme GA, Fuchs EF, Naqler HM, McCallum SW, Neiderberger CS, Schoor RA, Bruqh VM, 3rd, Honiq SC, et al. Herniorrhaphy with polypropylene mesh causing inguinal vasal obstruction: a preventable cause of obstructive azoospermia. *Ann Surg.* 2005;241(4):553–558.
10. Peiper C, Junge K, Klinge U, Strehlau E, Krones C, Ottinger A, Schumpelick V. The influence of inguinal mesh repair on the spermatic cord: a pilot study in the rabbit. *J Invest Surg.* 2005;18(5):273–278

ISSN: 0975-3583,0976-2833 VOL13,ISSUE05,2022

11. Peiper C, Junge K, Klinge U, Strehlau E, Ottinger A, Schumpelick V. Is there a risk of infertility after inguinal mesh repair? Experimental studies in the pig and the rabbit. *Hernia.* 2006;10(1):7–12.