ORIGINAL RESEARCH PAPER

Volume - 10 | Issue - 10 | October - 2021 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

STUDY OF THE RELATIONSHIP BETWEEN PRESENCE OF BILATERAL INGUINAL HERNIA AND INTENSITY OF LOWER URINARY TRACT SYMPTOMS IN A TERTIARY CARE CENTRE

Surgery

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ABSTRACT

BACKGROUND: The coexistence of an inguinal hernia and lower urinary tract symptoms (LUTS) is very common. The aim of the present study was to study the relationship between the presence of bilateral inguinal hernia and intensity of lower urinary tract symptoms.

MATERIAL AND METHODS: A prospective comparative study was done between December 2019 to May 2021. The study subjects were divided into group 1 (Study group): composed of 40 patients with bilateral Inguinal Hernia and group 2 (Control group): composed of 40 patients with no clinical evidence of bilateral Inguinal Hernia. A detailed history of the patients was taken and was subjected to a thorough general physical, systemic and local examination including per rectal examination. Routine blood investigations and routine urine macroscopic and microscopic examination were done. Ultrasonography for Kidney Urinary Bladder- Prostate (KUB-P) and uroflowmetry was also done to evaluate the symptoms of the patients.

RESULTS: 45% patients had symptoms suggestive of LUTS. The majority (18) with positive IPSS score > 8 were having direct hernia. In ultrasonography based assessment for bladder wall thickness, normal wall thickness (<3mm) was equally distributed between the two groups. There was statistical significance in Qmax between case and control groups (P=0.039). The difference of BOO (Bladder Outlet Obstruction) symptoms between lower and higher IPSS scores (P<0.05 were also statistically significant.

CONCLUSION: This study concluded that patients with bilateral IH and complaints of urinary symptoms related to BPH or other causes of Lower Urinary Tract Obstruction must be evaluated for LUTS and BOO by USG-KUBP and uroflometry and relieve the obstruction before proceeding hernia management.

KEYWORDS

LUTS, Inguinal hernia, BOO, IPSS, Uroflowmetry.

INTRODUCTION

Lower urinary tract symptoms (LUTS) are mostly prevalent among elderly men. A number of etiologic factors have been described with the genesis of urinary symptoms. These include aging on the nervous system and bladder, metabolic derangements, changes in fluid regulation, obstruction and autonomic over activity.[1] LUTS can be due to mechanical obstruction to urine flow or due to bladder hypo-contractility. These pathophysiologic elements are all common in the elderly and may be present alone or in combination.[2] The prevalence of moderate to severe LUTS in men ranges from 16.2% to 25.1%,while the prevalence of LUTS described at least 'sometimes' and at least 'often' is 72.3% and 47.9%, respectively. This prevalence increases with age, and the quality of life has reduced significantly among those with LUTS.[3]

A variety of factors are responsible for the development of an inguinal hernia. These include obesity and work related physical activity.

In urology practice, the coexistence of inguinal hernia and LUTS due to BPH is very common.[1] In both sexes, non-specific symptoms of bladder dysfunction become more common with age, probably owing to impairment of smooth muscle function and neurovesical coordination. Not all symptoms of disturbed voiding in ageing men should, therefore, be attributed to BPH causing BOO. Urologists prefer the term LUTS and discourage the use of the descriptive term 'prostatism'.[4]

Lower urinary tract symptoms (LUTS) include voiding or obstructive symptoms (hesitancy, poor and/or intermittent stream, straining, prolonged micturition, feeling of incomplete bladder emptying, dribbling, etc.,) and storage or irritative symptoms (frequency, urgency, urge incontinence, and nocturia). The severity of LUTS is best measured using quantitative symptom indices.[5]

Several symptom scoring systems have been developed to assess the degree of symptom severity in LUTS. The most widely used scoring system is the International Prostate Symptom Score (IPSS), developed by the American Urological Association (AUA) and adopted by the World health Organization (WHO). It is a valid tool for objectively assessing patients' symptoms, deciding choice of treatment for patients with LUTS and monitoring effects of any intervention procedure.[2] The IPSS is used to measure the severity of urinary symptoms and quality of life.[5] Patients with an inguinal hernia reportedly have higher IPSSs than those without inguinal hernia.[1] In addition, uroflowmetry when combined with IPSS, could offer improved sensitivity in the diagnosis of bladder outlet obstruction (BOO).[2]

The aim of the present study was to verify the correlation between the presence of bilateral Inguinal Hernias (BIH) and the intensity of Lower urinary tract symptoms (LUTS) quantified through the International Prostate Symptom Score (IPSS).

MATERIALS AND METHODS

A prospective comparative study was done at the department of surgery, Darbhanga Medical College and Hospital, Laheriasarai, Bihar to establish the correlation between LUTS and bilateral inguinal hernia between December 2019 to May 2021. A total of 80 patients were included in the study sample.

An informed, bilingual, written consent was obtained before including the patients as study subjects.

The study subjects were divided into two equal groups as follows:

Group 1 (Study group): composed of 40 patients with bilateral Inguinal Hernia.

Group 2 (Control group): composed of 40 patients with no clinical evidence of bilateral Inguinal Hernia.

The inclusion and exclusion criteria were as follows:

INCLUSION CRITERIA

All patients attending the outdoor patient department as well as those hospitalized with with Bilateral Inguinal Hernia irrespective of age, sex, cause, type (direct/indirect), size, complication etc (Group 1) and Lower urinary tract symptoms (LUTS) without Inguinal Hernia (Group 2) were included in the study.

EXCLUSION CRITERIA

Unilateral Inguinal Hernia or Unilateral Inguinal Hernia with other site Hernia were not included in the evaluation.

A detailed history of the patients belonging to both the groups was taken and they were subjected to a thorough general physical, systemic and local examination including per rectal examination. Digital rectal examination (DRE) was done to assess the size of the prostate gland clinically. Routine blood investigations including complete blood count, serum electrolytes, HIV/HBsAg status, blood sugar levels and routine urine macroscopic and microscopic examination. LUTS was quantified using the 7 question International Prostate Symptom Score (IPSS). Ultrasonography for Kidney Urinary Bladder- Prostate (KUB-P) and uroflowmetry was also done to evaluate the symptoms of the patients.

STATISTICALANALYSIS

SPSS version 21 was used for the analysis. Chi square with Yates' correction was used for the calculating p value and statistical significance.

RESULTS

Distribution of hernia in study population (n=40)

Among the study population (n=40), 55% (n=22) is having direct hernia and 45% (n=18) with indirect hernia. Majority of direct hernia patients were elderly with age more than 50 years (n=21). In < 50Years age group incidence of indirect type of bilateral hernia is 56%.

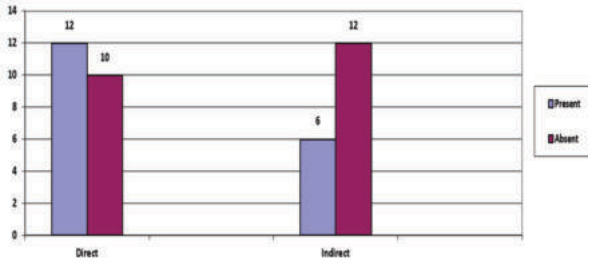
On the basis of subjective symptoms of lower urinary obstruction, 45% patients had of symptoms suggestive of LUTS.

Objectively patient was studied for LUTS on the basis of IPSS score. Score 8 – 19 are classified as mild to moderate symptomatic and score ≥ 20 as severe symptoms in a patient and was found in 45% of the study population. This group almost always needed some kind of treatment for LUTS.

When the study group (group 1) (n=40) was compared to the control group (group2), it was found that higher range of IPSS (20-35) was found in 18 subjects in group 1 compared to 10 subjects in group 2. Where as in case of IPPS range (0-7), 13 subjects in group 1 compared to 17 subjects in group 2. 9 subjects from group 1 and 13 subjects from group 2 had IPSS score between 8-19. The IPSS scores of <7 and 8-19 the control populations are higher in the group 2. Higher symptomatic scores were seen in study group with bilateral inguinal hernia. There is a statistical difference in IPSS score between group 1 (study group) and group 2 (control group) (p=0.004).

On subjective assessment of study group (group 1) for LUTS 18 patients were found to have severe symptomatic LUTS. 12 patients out of these 18 had direct type of inguinal hernia while the rest 6 indirect variety (figure-1).

Figure 1 : Diagram showing association of severely symptomatic LUTS with different types of bilateral hernia (n=40)



IPSS score >7 corroborates with the symptom score in the study group for both varieties of bilateral hernia. Majority (5 + 13) with positive IPSS score > 8 are of direct group. With low IPSS score < 7 more number of patients (10) belong to the indirect group (table-1).

Table 1 : Table showing the association of IPSS with different types of bilateral Hernia cases (n=40)

IPSS	Direct type	Indirect type	Total
<7	3	10	13
8-19	5	4	9
20-35	13	6	18
Total	22	18	40

Chi square with Yates' correction = 6.134, df = 1, (p < 0.05) Significant

Table 2 : Table showing the association of Qmax (Maximum flow rate) with different types of bilateral Hernia cases (n=40)

Qmax ml/sec	Direct type	Indirect type	Total
<10	8	3	11
≥10	13	16	29
Total	21	19	40

Chi square with Yates' correction =1.320, df =1, (p > 0.05) Not Significant

Table 3 : Table showing the association of Qmax (Maximum flow rate) between case and control

	≤10	>10	Total
Case	11	29	40
Control	3	37	40

Chi square value =4.240, df=1, (p = 0.039); Significant

In ultrasonography assessment for bladder wall thickness, 30 out of 40 patients have been seen with normal wall thickness (<3mm). This is equally distributed between the two groups. 10 out of 40 patients had thick wall out of which 60% belong to the direct hernia group. There was no statistical difference in bladder wall thickness between direct and indirect types of hernia (P >0.05).

Ratio of patients with Qmax ≤10 was 11:3 and Qmax ≥10 is 29:37 in case and control groups. The difference in Qmax was statistically significant (table-2,3).

27 patients (67.5%) of the study group had IPSS >7. Out of these only 18 patients (27.5%) presented with highest range of IPPS. But in this range i.e. IPSS (20 – 35) only 11 patients in this range had BOO by urodynamics. So ratio between IPSS (8 – 35): BOO = 27:11. This difference was statistically significant.

DISCUSSION

This study was done to assess the correlation between bilateral inguinal hernias and lower urinary tract symptoms (LUTS). 45% of the patients with a bilateral hernia in this study had severe LUTS. In a study by Stott MA et al, it was observed that in patients who underwent bilateral inguinal hernia repair the incidence of a direct hernia was almost 1.8 times to an indirect hernia. One study had found a significantly higher prevalence of hernia in the presence of varicose veins and hemorrhoids. These associations reflect the role of increased abdominal pressure in the setting of a hernia in BPH patients. Presence of overweight or adiposity, seems to be a protective factor for hernia formation as prevalence is low in this group. No significant age-independent associations were found with a chronic cough, constipation, physical activity at work, or a number of other variables.8 In the present study, 3 patients (0.08%) had a history of COPD and were undergoing treatment. Abramson et al found one in every five operated hernias showed evidence of recurrence. No significant age-independent associations were found between evidence of recurrence and other characteristics.[8]

In this study, there was no evidence of any recurrence following hernia operation till data compilation. But 5 patients out of 40 (13%) had a history of previous unilateral hernia repair surgery and presented with an opposite sided inguinal hernia. The present study had 13 patients (32.5%) with IPS-Score <7 and 18 patients (45%) with IPS-Score ≥20. Patients with high IPSS (≥20) were given either surgical or medical treatment. Pre-surgical management for those 18 patients with severe LUTS was given in the form of Foley's catheterization (n=1), medical treatment (n=14) and urethroplasty (n=3). Majority of these (n=12) were suffering from bilateral hernias of the direct type, indicating problems with urination and micturition may be one of the causative factors for the development of bilateral direct inguinal hernias. High IPPS score was found 1.8 times in patients of the study group 1 compared to control group 2. Rodolfo Borges dos Reis et al verified earlier and published the correlation between the presence of Inguinal Hernia and the intensity of LUTS related to BPH quantified through the International Prostate Symptom Score (IPSS).1 A possible explanation for this association may be the fact that patients with obstructive voiding dysfunction may need to strain to void. This effort over time may have a direct impact on the abdominal wall contributing to the development of IH. Another possibility remaining on the fact that IH and BPH are part of the aging process which incorporates other functional and anatomic disorders. Whether all these changes have a cause effect relationship or are independent factors just related to the aging process, are still to be defined.

Uroflowmetry electronically measures urine flow rate throughout the course of micturition. Like IPSS, the results of uroflowmetry are largely nonspecific for symptoms. However, the gold standard for the diagnosis of BOO is with urodynamics studies.[9] In the urodynamic study it was found that only 11 patients out of 40 patients (27.5%) in study group 1 presented with bladder outlet obstruction (BOO). These included 8 patients with enlarged prostate and 3 patients with urethral stricture. BOO was considered when Qmax was <10 in the urodynamic study. BOO was mostly found with direct type of hernia (73%). The uroflometry study was done twice for each hernia patient and the best result was reported in the study. As uroflowmetry was considered a valid test if the voided volume was not less than 150 ml, one episode of Uroflowmetry was sufficient for the control group.

The Qmax in uroflometry is very important and valid parameter for assessment of LUTS or BOO. So it can be easily said that Bladder Outlet Obstruction or Severe Lower Urinary Tract Symptoms and B/L Inguinal Hernia have a definite correlation. These findings are in corroboration with the paper published by Rodolfo Borges dos Reis et al study.[1]

Post-voidal residual urine volume (PVRUV) >60 ml is taken as significant in a patient to be diagnosed as a case of –chronic urinary retention which in majority of cases are due to lower urinary tract obstruction (uretheral stricture, BPH). Five out of forty patients of bilateral inguinal hernias in our study had significant PVRUV (>60ml) and all of them were suffering from direct variety of bilateral hernias.

There is very narrow range of difference in case and control group regarding significant post void residual urine (PVR > 60ml). In my study five out of forty patients of bilateral inguinal hernias and seven out of forty subjects of the control group had PVRUV >60 ml. This signifies that all patients of chronic urinary retention do not suffer from inguinal hernia.

In ultra sonographic assessment for bladder wall thickness, 30 out of 40 patients were found to have normal wall thickness (<3mm). This was equally seen between the two groups. 6 out of 10 the patients with thick wall (60%) belong to the group of direct hernias.

The present study presented a very narrow range of difference in Bladder Wall Thickness (BWT) in both case and control group. The ratio of increased BWT in case and control group was 10: 8(n=40). The incidence of increased BWT in B/L hernia patient is 25% and in control it was 20%. Increased BWT had not turned out to be a significant cause for development of hernia. Out of the 40 patients of the study group fifty percent of patients had enlarged prostate i.e. > 25 gms detected by transabdominal lower abdomen ultrasonography. Two third of this prostatomegaly patients suffered from direct bilateral hernias.

Another observation shows very narrow range of difference in prostate size in both case and control group. The ratio of enlarged prostate in case and control group is 20:13(n=40). The incidence of enlarge prostate (25 grm) in B/L hernia patient is 50% and in control it is 34%. It was statistically insignificant in relation LUTS with inguinal hernia. The present study also tried to find out a relationship between severe LUTS (when IPSS >20) and BOO (when Qmax ≤10). A total of 22 patients (55%) out of 40 had IPSS >7.Only 18 patients (45%) presented with highest range of IPPS (20-35). Out of these 18 patients only 11 were discovered to have BOO when investigated by urodynamic study. So the ratio between a high IPSS (20 – 35) and BOO was 27:11 which is statistically significant finding.

LUTS can have a negative effect on quality of life in BPH patients. IPSS, prostate volume, detrusor resistance index, intravesical prostatic protrusion, capillary artery resistive index, intraprostatic pressure, post-void residual, uroflowmetry, bladder wall thickness, and pressure flow assessments are commonly used to evaluate patients with LUTS due to BPH.[10]

The incidence of IH in men undergoing prostatic surgery is 15-25%, in addition 11-30% of patients who were submitted to surgical IH repair and presented LUTS precipitate postoperative retention requiring urological intervention. Urologists should be aware of this association and advise their patients of the possible consequences.[1]

CONCLUSION

The etiology of an inguinal hernia is multi-factorial. Multiple theories have been put forward to explain the origin of acquired inguinal hernia. The essence of them all centered on raised intra-abdominal pressure, which is more evident in bilateral disease. In this study, a definite association was found between the presence of Lower Urinary Tract Obstruction and occurrence of Bilateral Inguinal Hernia. On the basis of this study, it can be concluded that if patients with Inguinal Hernia (especially bilateral IH) have complaints of urinary symptoms related to BPH or other causes of Lower Urinary Tract Obstruction they must be evaluated for LUTS and BOO by USG-KUBP and uroflowmetry and relieve the obstruction before proceeding hernia management. The complications of hernia in the form of obstruction or recurrence can be prevented by early diagnosis and treatment of Lower Urinary Tract Obstruction.

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