

## ASSOCIATION BETWEEN INGUINAL HERNIA AND BENIGN PROSTATIC HYPERPLASIA: A LITERATURE REVIEW

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**Abstract: Objective:** To carry out the analysis and review of available articles on the relationship between the appearance of inguinal hernias and benign prostatic hyperplasia. **Methodology:** The study consists of a literature review carried out between June and August 2022, with a bibliographic survey in the following databases: PubMed, Analysis And RetrievalSystem Online (MedLine); Scientific Electronic Library Online (SciELO), Google Scholar and LILACS **Results:** 5 articles had the eligibility criteria for the topic and were used to compose the review. Studies have shown that there is a potential causal relationship between the appearance of inguinal hernias and the diagnosis of benign prostatic hyperplasia. Furthermore, it has been shown that one of the possible causes for increased herniation, which is increased abdominal pressure, is debated in several studies. **Conclusion:** BPH and HI may have a causal link, however, the low number of studies does not allow this conclusion to be made in a forceful way, requiring further studies related to the topic.

**Keywords:** Prostatic hyperplasia; inguinal hernia; Association.

## INTRODUCTION

The prostate is an almond-shaped organ located at the junction of the bladder and the beginning of the urethra in men. It has the function of secreting a milky and alkaline liquid that corresponds to about 30% of the semen volume. It is covered by a connective tissue capsule that contains smooth muscle fibers and elastic tissue. With the capsule, 3 zones are identified: the transition zone, located closest to the urethra; the central zone, where the common duct of the prostate and the ejaculatory duct; and the peripheral zone. The normal weight of the prostate varies from 20 to 30g (MCVARY, 2006).

Benign prostatic hyperplasia (BPH) is the most common neoplasm in elderly men and is present in approximately 8% of men over 40 years of age and in up to 90% of men over 90 years of age. This condition is characterized by an enlarged prostate and is not necessarily associated with symptoms coming from this pathology, such as those of the lower urinary tract, for example, urinary incontinence and difficulty urinating. The clinical picture of these patients, in general, is asymptomatic, but they can have profound impacts on the quality of life of these patients or require surgical treatment, with the peak incidence of symptoms at older ages (LANGAN, 2019).

A hernia is a protrusion of the peritoneum, fat from the peritoneum or abdominal organs through holes of congenital or acquired origin in the abdominal wall. The most common hernias are inguinal hernias, umbilical hernias and scar hernias (KARK; KURZER, 2008). Inguinal hernias (HI) are the main type of hernia in the groin area and can be asymptomatic, cause pain or even abdominal obstruction. It is a common cause of operations in general surgery and has an incidence of 130-160 procedures per 100,000 population in many regions in the West. The surgical procedure is usually indicated due to pain and to improve the aesthetic appearance (MARTA RÓS BERNDSEN et al., 2019).

The association of inguinal hernias and BPH has been debated for some years. This association has been known since the 1980s, and it is a common finding in urology clinics. However, there is no clear cause for this association or its pathophysiology, and it may be associated with greater urinary effort, which promotes greater intra-abdominal pressure and, consequently, the chance of herniation (MIYAJIMA, 2018). With this, the objective of this study is to make a synthesis and discuss the scientific literature on the

subject, bringing the main findings on the subject.

## METHODOLOGY

This is a literature review that is a method that favors analysis and research results without judicious or prospecting purposes. The sequence of steps for the construction of this study was defined. Starting with the elaboration of the research guiding question, followed by the search in the literature of the primary studies, soon after, there is the extraction of the pertinent information contained in the studies that were included in the previous stage, as well as their evaluation and finally, the analysis and synthesis of the review results and the presentation of the literature review.

In this sense, the inclusion and exclusion criteria were defined. To enter the scope of the study, the selected articles needed to be original, in addition to having full text available, published in Portuguese, English and Spanish, they needed to be indexed in the databases defined during the period from January 2000 to June 2000, 2022 and that presented information associated with the presence of inguinal hernias and their association with BPH.

It is also noteworthy that theses, literature reviews and dissertations were excluded, in addition to other works that did not belong to the scope of the study. In addition, articles that appear duplicated in searches were considered only once. The literature search was performed in August 2022, in the following databases: PubMed, Analysis And Retrieval System Online (MedLine); Scientific Electronic Library Online (SciELO), Google Scholar and LILACS. The searches were performed using the Descriptors "Inguinal Hernia", "Benign Prostatic Hyperplasia", "Association", with the help of the Boolean operators "AND" and "OR".

## RESULTS AND DISCUSSION

A search was carried out in the databases with the descriptors established for the research. 104 studies were found using the descriptors indicated by this work. Of these, 34 were articles and had the full text for evaluation. After applying inclusion and exclusion criteria, 5 articles were selected. To better elucidate the theme, a table was organized (Table 01) with the main literary findings.

Author and Year	Main findings
PARTHIBAN; DURAIRAJ, 2019	which can precipitate inguinal hernia. The occurrence of both inguinal hernia and BPH with lower urinary tract symptoms increases with age. Some studies show that their occurrence together is considered a chance co-existence rather than cause and effect. This study is aimed to find out whether BPH is a significant risk factor for developing inguinal hernia in males. Methods: This study was conducted at a tertiary care hospital in Chennai. 126 males, aged 40 and above were selected according to inclusion criteria and were divided into two groups viz cases (with inguinal hernia
WU et al., 2020	22,310 men with LUTS-BPH and 22,310 matched men without LUTS-BPH were identified and followed for IH from 1997 to 2013. Both IH and LUTS-BPH were defined by the ninth revision of the International Classification of Diseases code (ICD9
REIS et al., 2011	52 men aged over 55 years were evaluated for BPH/urinary symptoms and HI. It was concluded that the presence of BPH plays an important role in the development of HI, but the specific mechanism and the degree of correlation are uncertain.

LAU et al., 2007	A case-control study that sought the association of various urological conditions and the presence of inguinal hernia. No statistically significant association was found between the presence of BPH and the diagnosis of HI.
KUMAR et al., 2020	50 men admitted for the treatment of inguinal hernia were evaluated for the presence of prostatic hypertrophy. An association of increased prostate volume and the presence of urinary symptoms with an increased incidence of HI was shown.

Table 1: Main findings of the articles selected for the literature review.

Source: Own authorship, 2022.

The presence of inguinal hernia in men with BPH is a topic of great debate in urology, however, studies that conduct specific in-depth analyzes on the topic have shown to be scarce and with varied methodologies. It is clear that there was an increase in the incidence of the two pathologies is primarily associated with other risk factors, such as the increase in the average age of men, and other factors already documented in the literature (ASHINDOITIANG et al., 2012).

Traditionally, some studies assess the intensity of urinary discomfort using the International Prostate Symptom Score (IPSS). This score is based on a 7-question questionnaire, including bladder emptying difficulty, urinary frequency, urination difficulty, flow interruption, amount of urine, and nocturia. Patients are then classified according to the intensity of lower urinary tract symptoms (LUTS) into mild, moderate and severe (HOMMA et al., 1997). The function of using these scores is due to the

fact that, usually, patients who have inguinal hernia have a higher IPSS than those without HI (PARTHIBAN; DURAIRAJ, 2019).

The literature is strong in the hypothesis of the association of increased abdominal pressure and increased incidence of inguinal hernia. According to WU et al. (2020), due to urinary incontinence and other urological symptoms caused by BPH, there is a greater effort of the muscles involved in urination and abdomen, which, associated with other factors, such as low urinary frequency and incomplete emptying of the bladder, may be causal factors of HI.

Also in this study, it was demonstrated that the peak incidence of HI in patients with BPH is above 40 years of age, with a difference in diagnosis between HI in patients with BPH and with moderate or severe LUTS, on average of 4 years. This was pointed out as a positive indication of the correlation between the two variables, since when compared to patients with BPH without urinary symptoms, the average difference in years of diagnosis was lower (WU et al., 2020).

On the other hand, another cross-sectional study evaluated the presence of inguinal hernia in 126 male patients diagnosed with BPH, divided into 2 groups with the same number of patients: study group (with BPH and HI) and control group (with BPH and without HI). The prostate volume of both groups was considered statistically equal and the IPSS did not differ from one group to the other. In assessing the incidence of HI, it was seen that there was no statistical difference between the groups analyzed. It has been stated that the occurrence of both conditions may be more associated with physiological effects of aging than a causal relationship between them. (PARTHIBAN; DURAIRAJ, 2019).

Similar findings were made by LAU et al. (2006), who evaluated in addition to BPH, other conditions that promote increased mean

abdominal pressure. The sample consisted of patients who had a diagnosed inguinal hernia and underwent treatment for the pathology. Compared to other variables, BPH did not increase the incidence of HI, with other factors, such as family history, more influential on this issue.

The presence of BPH-LUTS and HI was evaluated by a Brazilian study in 2011. In this study, two groups were evaluated: one with patients with diagnosed HI and the other without symptoms or apparent clinical HI. The conclusion was that, in the intergroup comparison, the presence of LUTS-BPH was decisive and can be considered as a risk factor for the appearance of HI, when compared to the control group. In addition, patients with higher IPSS were found to be more likely to develop HI. However, the uncertain role of a greater IPSS in the development of HI is noted (REIS et al., 2011).

According to this study, RAJA 2021 showed the HPB-HI relationship with a sample of 50 men. In addition to the ISSP assessment, the patients' prostate volume was evaluated, showing a high correlation between a greater prostate volume/LUTS with the incidence of inguinal hernia. In addition, it is reported that the presence of BPH is a strong positive predictor for the occurrence of HI.

## CONCLUSION

It is worth mentioning that this work was affected by the low number of studies related to the topic, which can lead to conclusions that do not fit the reality. The correlation between inguinal hernia seems to be a topic of debate within the field of urology. The increased incidence of benign prostatic hyperplasia appears to accompany the increase in this condition. However, there is no global explanation for the relationship between the two conditions. In addition, as shown by this work, the conclusion of works with

similar methodologies can be diametrically different, which can lead to controversies on the subject. However, studies that were positive for the causal relationship pointed to a positive effect of BPH in increasing the incidence of HI. Therefore, more studies and clinical trials are needed to explore the topic in order to delimit in more detail the relationship between the two conditions.

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