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*Original Article*

# Urethral Stricture; Investigation of Demographic Characteristics in two Tertiary Hospitals in Isfahan/Iran

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**Abstract.** According to previous publication, urethral stricture is a common pathology with dissimilar etiologic features in diverse age groups and societies. The aim of this study was to investigate demographic characteristics in two tertiary hospitals in Isfahan/Iran. All patients with urethral strictures were obtained from 2008 to 2018 from urology wards located at the two tertiary hospitals in Isfahan/Iran. According to ICD-10, demographic and clinical information were recorded in Excel and analyzed by SPSS. Age, as a continuous variable, was expressed as mean ± standard deviation (SD). A p value of <0.05 was considered as significant. For a period of 10 years there were a total of1792 patients comprised of 433 females and 1359 males with urethral strictures. The mean ± SD of age was 41.9 ±24.5 years old. With a between age of 30 to 70 in 71% females showed disease at younger duration of life (p<0.001). Urethral strictures was occurred in 30% under the age of 10 years old. The pattern of attendance for most patients was once and in ranged from 2 to 5. Intermediate time for those with the pattern of recurrence ranged from 8 to 3074 days after surgery. Urethral strictures categorized as an undertreated disease both nationally and internationally. In this study for over a period of ten years, around 1792 patients' visited two tertiary hospitals in Isfahan/Iran due to urethral strictures disease. Therefore in order to reduce the severity of disease and associated costs, identifying risk factors for occurrence or progression in addition to pharmacotherapy approach recommended to be advantageous.

**Keywords**: Urethral, strictures, urethrotomy, demographic, Isfahan

## Introduction

Urethral strictures frequently occur, and their risk increases with age. They are also reflected to be the most stimulating and demanding problem that urologists are required to manage [1]. Patients with urethral strictures experience progressive narrowing of the urethral lumen such as weak steam, imperfect emptying and many other related symptoms that may look like those of other causes of bladder outlet obstruction such as benign prostatic hyperplasia. The disease needs to be ruled out in patients presenting with Fournier's gangrene, especially when there is urinary extravasation, and in young patients with recurrent epididymitis or prostatitis [2]. An associated prevalence of 229-627 per 100,000 males was reported for urethral strictures [3]. These values ranged from 10 to 100 in the United Kingdom [2]. Study of urethral strictures characteristics obtained from 1439 male patients in Italy showed a mean age of disease presentation around 45.1 years (range 2-84 years) with a mean length of 4.2 cm comprise 92.2% occurring in the anterior urethra [4]. The leading cause of urethral stricture was mentioned as infection urethritis, trauma and iatrogenic or idiopathic. However as an easy procedure, internal urethrotomy might offered as an optimal strategy for treatment associated to urethral strictures but it could not be considered as the first-line of treatment due to its poor success rate of around 20% [5-8]. The aim of this study was to investigate demographic and clinical characteristics associated with urethral strictures in two tertiary hospitals in Isfahan/Iran.

## Materials and Methods

The study was conducted at the Isfahan Kidney Transplantation Research Centre (IKTRC) and approved by the Institutional Review Board (No. 396454). Data were obtained from 30 November 2008 to 4 Aug 2018associated to patients with urethral strictures those attended urology wards located at the two tertiary hospitals; Khorshid and Alzahra. The urethral strictures were defined according to the International Classification of Diseases (ICD-10). In the first step all patients with urethral strictures were defined from (ICD-10) linked to code N35.9 and in the next step patients with internal urethrotomy selected for further analysis according to (ICD-10) by the code N58.6.

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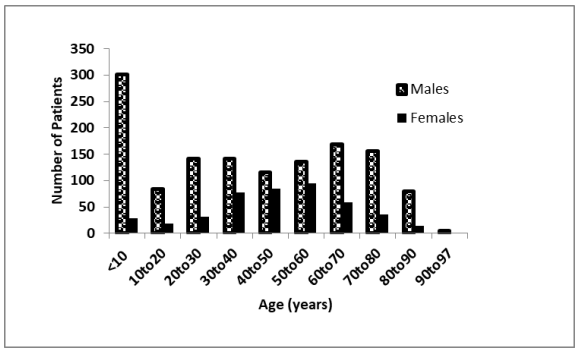


**Figure 1** Distribution of age in patients with urethral strictures in two tertiary hospitals.

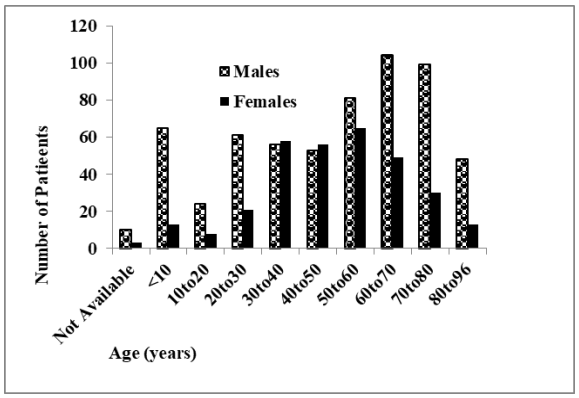


**Figure 2** Distribution of age in population studied at Khorshid hospital.

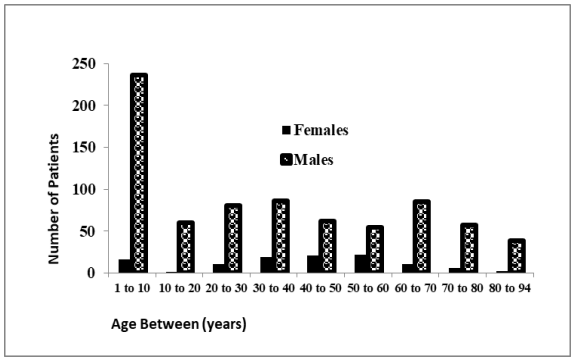


**Figure 3** Distribution of age in population studied in Al-Zahra hospital.

## Statistical analysis

Microsoft Excel was used to arrange raw data before being inputted into the Statistical Package for Social Science (SPSS® version 20; IBM Corp., Armonk NY, USA) for analysis. Age, as a continuous variable, was expressed as mean ± standard deviation (SD). The normality distribution of age was tested using the Kolmogorov–Smirnov test. Variables such as gender, urethral stricture recurrence, year of report and hospital stay were expressed by frequency and percentage.

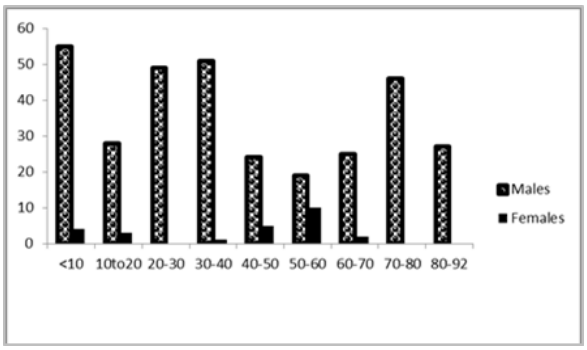


**Figure 4** Distribution of age in patients with internal urethrotomy. (n=349).

## Results

Table 1 shows demographic characteristic in patients with urethral strictures at the two tertiary hospitals (Alzahra&Khorshid) from 2008 to 2018 in Isfahan/Iran. In all, 1792 patients with urethral strictures comprised of 875 patients in Alzahra and 917 patients in Khorshid hospital were identified. Of the total population studied 24% werfemales with urethral strictures. Figure 1 shows the distribution of age in total population studied. With a mean±SD age of 41.9 ±24.5 years old, age related to urethral stricture disease was ranged from 30 to 70 years in 71% of females and 42% of males (42%) that was significantly different ($p<0.001$). Approximately 30% of patients comprised of 7% females and 23% males were diagnosed at the age under 10 years old.Figure 2 shows the distribution of age according to gender at Khorshid hospital. With a minimum of 1 and a maximum of 96, the mean age of population was 49 .1 ± 22.9 years old. Figure 3 shows the distribution of age according to gender. With a minimum of 1 and a maximum of 93, the mean age of population with urethral strictures was 34 .7 ± 26.1 years old. As could be seen 31% of males aged less than 10 years old. Regarding to hospital attendance 800 patients attended hospital for once, 57 attended for two, 11 for three, 4 for four and 2 for 5 times. Duration of attendance for 126 patients was 1 day after surgery and in 11 patients ranged from 8 to 3074 days after surgery. Among this population 1 female attended hospital after 60 days of surgery. In a further attempt, 349 patients with internal urethrotomy comprised of 324 males and 25 female were studied (Table 2). Figure 2 shows the distribution of age in patients with internal urethrotomy. With a minimum of 0 and maximum of 13 days, the mean duration of hospital stay was 1.4 ± 0.07 days.

## Discussion

The natural history of urethral stricture has been well clarified. Urethral stricture could lead to major morbidity comprising urinary retention, urethral abscess, trabeculated bladder, hydronephrosis and urinary tract calculi [8, 9]. It signifies a distinctive opportunity for specialized surgical management that enormously improves long term morbidity [10], but there is limited data regarding to prevalence of urologic disease globally in general and in Isfahan/ Iranin particular [11]. According to previous

TABLE 1
DEMOGRAPHIC CHARACTERISTICS IN PATIENTS WITH URETHRAL STRICTURE

| Variable | Alzahra | | | Khorshid | | |
|---|---|---|---|---|---|---|
| | Total n= 875 | Males n=758 | Females n=117 | Total | Males | Females |
| | 875 | 758 | 117 | 917 | 601 | 316 |
| Age | | | | | | |
| Mean ±SD | 34.7± 26.1 | 33.5± 26.7 | 42.1± 19.8 | 49.1± 22.9 | 49.2± 24.7 | 48.8± 19.0 |
| (Min-Max) | (1-93) | (1-93) | (2-81) | (1-96) | (1-96) | (1-89) |
| Mean length (cm) | | 3.4 | | | | |
| Most common site | | Bulbar urethra | | | | |

TABLE 2
DEMOGRAPHIC CHARACTERISTICS IN PATIENTS WITH INTERNAL URETHROTOMY (N= 349)

| Variable | Total n=349 | Males n=324 | Females n=25 |
|---|---|---|---|
| Age | | | |
| Mean ±SD | 38.9± 26.1 | 39.9± 26.6 | 39.0± 20.6 |
| (Min-Max) | (1-91) | (1-93) | (2-67) |
| Duration of hospital stay | 1.3± 1.4 (0-13) | 1.3± 1.4 (0-13) | 1.4± 1.5 (0-6) |

publication, a significant portion of undertreated global disease is urologic—urinary retention, urethral stricture, malignancy, and urolithiasis [12, 13].Extensive anterior urethral stricture is common in patients as study of 42 patients those surgically managed for adult acquired buried penis, 13 had urethral stricture disease (31.0%). Stricture location was universal in the anterior urethra [14].

In this study from 2008 to 2018, there were 1792 patients those attended two tertiary hospitals. In addition to lower frequency of females with urethal stricture (24%), the higher proportion of females (71%) age ranged from 30 to 70 years old. Previous publications confirmed that the true incidence of female urethral stricture is not known. Bladder outlet obstruction in women is rare, and it was reported to be in less than 8%. The main pathogenic causes for developing female urethral stricture disease mentioned as; blunt trauma, infection, chronic irritation, prior dilatation, difficult catheterization, urethral surgery, urethral diverticulae, and iatrogenic injury [15-18].

In this study, the mean ± SD age of patients was 41.9 ± 24.5 years old that is significantly younger when compared to previous reported data a mean age of 53.43±16.5 years [20] and 69.5 years [21].

In agreement with previous published article, urethral strictures affected 30% of population comprised of 7% females and 23% males under the age of 10 years old. Urological disease disturbs the young and old, male and female with a wide-ranging variety of pathology such as; non-invasive, invasive, severe, long-lasting, reconstructive, pharmacotherapy and surgical strategies [13].

## Conclusion

In Isfahan/Iran there were 1792 patients with urethral stricture over a period of ten years that attended two tertiary hospitals. These number of cases suggested that it could be relatively a common urologic disorder, and in many cases seem to be devastating. As study of demographic characteristics of patients confirmed a mean age of 41.9 years that was younger than previously reported age from other countries. Further research is needed to better define the cause of disease. Recognizing origin in these cases may support to classify pharmacotherapy and surgery management that could prevent disease development.

## Conflict of interest

The authors declare no conflict of interest.

## Acknowledgement

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