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A Study of Genitourinary Fistulas and its Implications

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Abstract

Context: Genitourinary fistulas present significant challenges in surgical management, often causing considerable distress. In developing countries, these are commonly linked to obstetric trauma, while in developed regions, they often result from gynecologic or pelvic surgeries.

Aims: This retrospective study aims to analyze the etiology, diagnostic methods, surgical approaches, and outcomes of genitourinary fistulas treated over four years at a tertiary care center.

Settings and Design: The study is a single-center retrospective review of 30 cases treated surgically from 2020 to 2023.

Methods and Material: Patient data on demographics, etiologies, diagnostic methods, and surgical techniques were gathered from medical records.

Statistical analysis used: Descriptive statistics were applied to summarize demographics, fistula types, and surgical outcomes, with success rates calculated for each technique.

Results: Vesico-vaginal fistulas were the most common, often following abdominal hysterectomies. Trans-abdominal repairs, especially with omental repair, showed high success rates. There was a decline in obstetric-related fistulas and an increase in cases linked to gynecologic surgeries, especially hysterectomies.

Conclusions: The study identifies a shift in genitourinary fistula etiologies, with a decline in vesico-vaginal fistulas (VVF) due to better obstetric care and an increase in uretero-vaginal fistulas (UVF) linked to rising hysterectomy rates. Trans-abdominal repair techniques showed high success rates, emphasizing the importance of surgical principles for optimal outcomes.

Keywords: Genitourinary fistula, vesico-vaginal fistula, uretero-vaginal fistula, surgical repair techniques.

Key Messages: This study demonstrates a notable shift in genitourinary fistula trends, with decreased vesico-vaginal fistulas due to better obstetric care and rising uretero-vaginal fistulas linked to hysterectomies. These findings underline the critical need for skilled surgical intervention and a multidisciplinary approach for optimal patient outcomes.

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INTRODUCTION

Genitourinary fistulas cause significant distress to patients and pose a challenging problem for surgeons. In developing countries, these fistulas are frequently caused by birth trauma, often due to obstructed labour. In developed countries, they typically result from complications during gynaecologic or pelvic surgeries.[1] Treating these conditions requires advanced surgical skills and a multidisciplinary approach to improve patient outcomes. The objective of this study is to evaluate the etiologic, diagnostic and therapeutic aspects of genitourinary fistulas over a period from 2020-2023.

Subjects and Methods

Study Design: Retrospective analysis conducted over a 4 year period from January 2020- December 2023.

Study Population: 30 patients who underwent surgical intervention for genitourinary fistulas within the specified time frame.

Inclusion Criteria:

- All cases of genitourinary fistulas who underwent surgical intervention.

Exclusion Criteria:

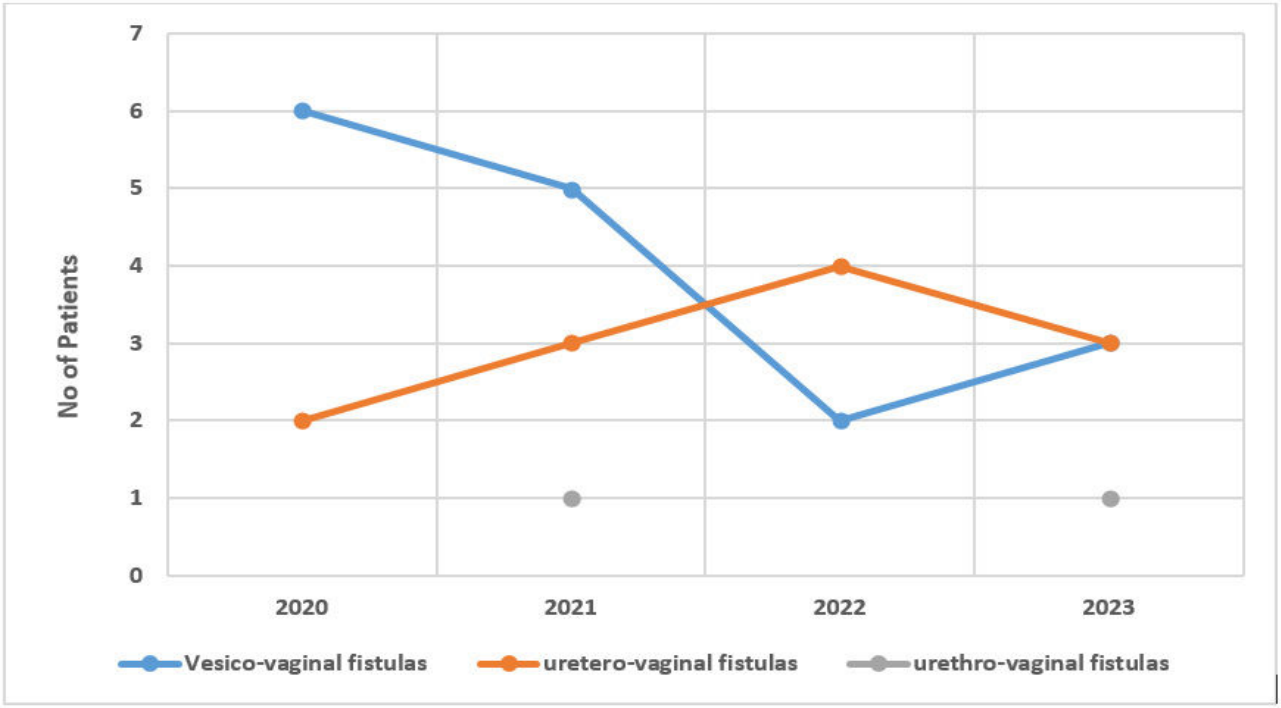
- Patients of genitourinary fistulas who did not undergo surgery.
- Patients whose medical records were incomplete.

Data Collection: Data were collected from medical records, including patient demographics, etiology, diagnostic findings, surgical techniques and outcomes.

Data Analysis: The analysis focused on patient demographics, the types of fistulas, contributing factors, surgical approaches and outcomes to gain insights into the characteristics and management of these conditions.

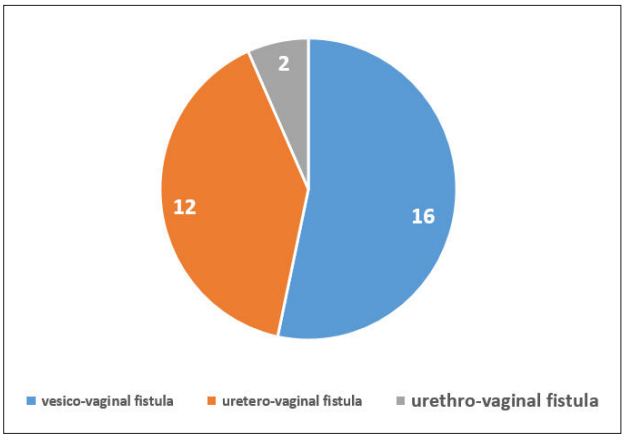
RESULTS

The age of patients ranged from 15 to 55 years, with a mean age of 36 years. The youngest patient had a history of trauma, while the oldest patient was diagnosed with carcinoma of the cervix.



Graph 1: Trends in Genito-Urinary Fistula Cases

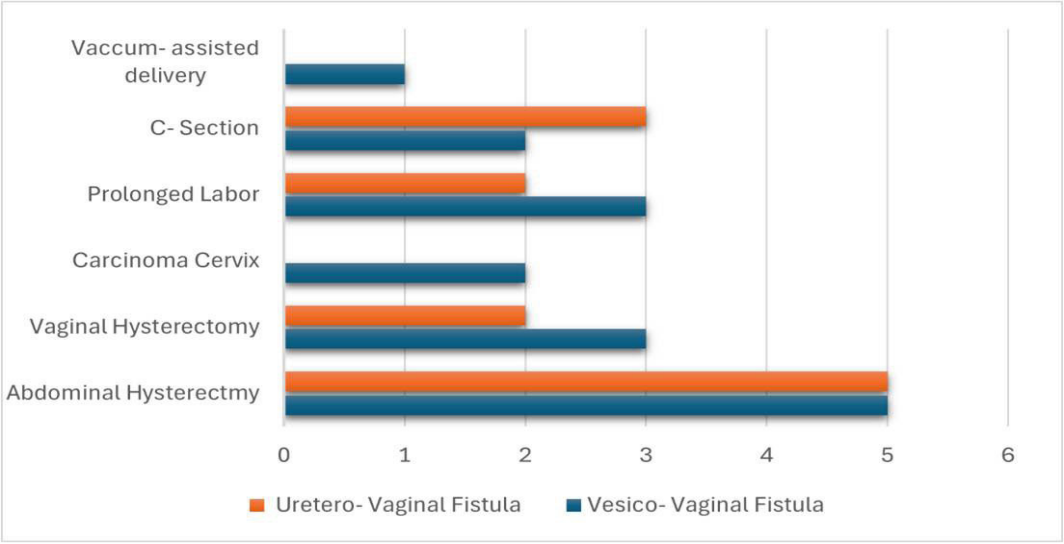
Graph 1 shows the number of patients diagnosed with different types of fistulas from 2020 to 2023. The highest incidence was observed for vesico-vaginal fistulas while urethro-vaginal fistulas had the lowest patient count in this study.



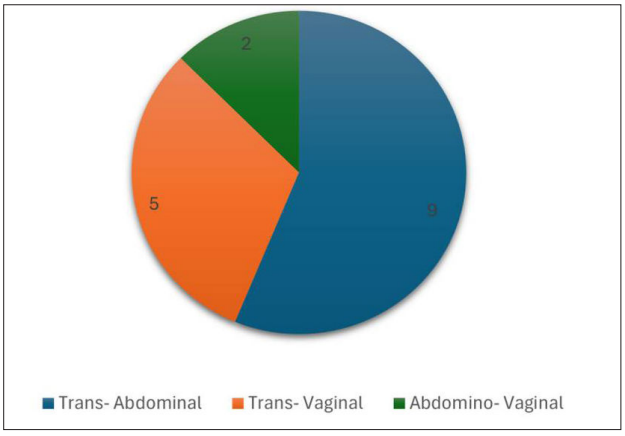
Graph 2: Distribution of Patients by Type of Fistula

Graph 2 shows that vesico-vaginal fistulas were the most prevalent (16 patients) with 11 classified as supra-trigonal and 5 as trigonal.

Graph 3 shows that abdominal hysterectomy is the most common event preceding both ureterovaginal and vesico-vaginal fistula occurrences followed by C-section and vaginal hysterectomy for uretero-vaginal fistula and prolonged labour for vesico-vaginal fistula.



Graph 3: Events preceding fistula occurrence

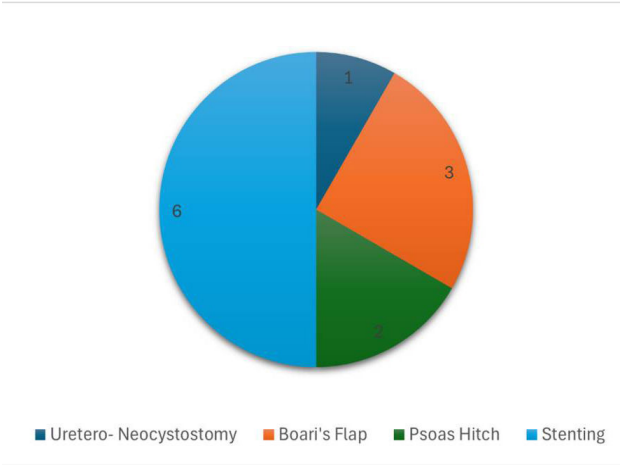


Graph 4: Surgical Approaches for Vesico-Vaginal Fistula Repair

Graph 4 shows that trans-abdominal approach is the most commonly used surgical method for vesico-vaginal fistula (VVF) repair, with three cases undergoing omental repair. This is followed by the trans-vaginalapproach, where two cases underwent Martius repair and the abdomino-vaginal approach, with two cases also utilizing omental repair.



Fig. 1: Vesico-vaginal Fistula



Graph 5: Surgical Repair Methods for Uretero-Vaginal Fistula

Graph 5 show that stenting is the most commonly used method for uretero-vaginal fistula (UVF) repair, followed by Boari's flap while psoas hitch and uretero-neocystostomy are less frequently used.

The trans-abdominal and abdomino-vaginal approaches for vesico-vaginal fistula repair, as well as all uretero-vaginal fistula repairs had a 100% success rate. The only failure occurred with the trans-vaginal approach for vesico-vaginal fistula repair with a success rate of 83%, but it was later successfully re-repaired.

In this study, two cases of urethro-vaginal fistulas were identified. The first involved a 15-year-old with a fistula following a traumatic fall, while the second case involved a 18-year-old girl who developed a fistula after a rape incident. Both patients were successfully managed with trans-vaginal closure.

DISCUSSION

Genito-urinary fistulas pose significant challenges, often resulting from factors such as obstetric trauma, surgical complications or malignancies. Accurate diagnosis is crucial for effective management, employing methods like clinical examination, methylene blue dye tests, ultrasonography, intra-venous urography, cysto-urethroscopy, CECT KUB and MRI Pelvis to confirm the presence and type of fistula.[2]

This study shows a notable increase in ureterovaginal fistulas (UVFs) related to hysterectomies was observed, alongside a decrease in vesicovaginal fistulas (VVFs) attributed to improved obstetric care. In contrast, another study found that iatrogenic factors accounted for 73.2% of genitourinary fistulas, particularly highlighting VVF as the most common type.[3] While the reduction in obstructed labour-related fistulas aligns with advancements in healthcare, the rise in iatrogenic injuries reflects a growing complexity in genitourinary fistula cases, emphasizing the need for enhanced surgical techniques to ensure better patient outcomes.

Timely surgical intervention plays a pivotal role in improving outcomes. While early repair is often beneficial for cleanly incised injuries, delayed repair may be necessary for cases with significant local tissue damage or inflammation. A multidisciplinary approach is essential for optimal patient outcomes, emphasizing the importance of individualized care based on the specific characteristics of each case.[4]

Our findings also indicate high success rates for trans-abdominal and abdomino-vaginal repair approaches, emphasizing the significance of experienced surgical teams and adherence to established surgical principles in achieving favourable outcomes. These findings align with the previous study that concluded better outcome by abdominal technique due to improved tissue exposure and the ability to utilize omental flaps during vesicovaginal fistula repair.[5]

LIMITATIONS

This study has several limitations that may affect the interpretation of its findings. Firstly, the retrospective design may introduce biases related to the completeness of medical records, potentially impacting data accuracy. The relatively small sample size of 30 patients limits the generalizability of the results to larger populations. Additionally, being a single-centre study may not reflect broader trends seen in different healthcare settings. The lack of long-term follow-up data on recurrence rates also limits our understanding of the durability of the surgical repairs. Finally, variations in surgical expertise among different practitioners may influence outcomes, which were not accounted for in this analysis.

CONCLUSION

The study reveals a shift in etiological trends for genito-urinary fistulas: a decrease in vesico-vaginal fistulas (VVF) due to improved obstetric care and an increase in uretero-vaginal fistulas (UVF) linked to a rise in hysterectomies. Despite these changes,

trans-abdominal repair shows a high success rate, with positive outcomes resulting from adherence to essential surgical principles.

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