



Genital Tuberculosis Presenting as Primary Infertility in a Woman with Septate Uterus: A Case Report

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Abstract

Female genital tuberculosis (FGTB) remains an important but underdiagnosed cause of infertility in tuberculosis-endemic countries, and it can coexist with congenital uterine anomalies, complicating diagnosis and management. We report the case of a 28-year-old nulligravida with primary infertility of three years duration, regular menstrual cycles, and no significant medical comorbidities. Pelvic ultrasonography suggested a bicornuate or septate uterus. Diagnostic hysteroscopy demonstrated a uterine septum dividing the endometrial cavity, with a smaller left cavity and a poorly visualised left ostium. Laparoscopy revealed flimsy pelvic adhesions, Fitz-Hugh-Curtis-like perihepatic adhesions, and a retort-shaped uterus with fundal indentation. Chromopertubation demonstrated bilateral tubal occlusion. Peritoneal fluid adenosine deaminase (ADA) was elevated at 27.7 U/L, supporting a diagnosis of genital tuberculosis; peritoneal fluid was additionally sent for CBNAAT and endometrial tissue for histopathological examination. The patient was classified as American Society for Reproductive Medicine (ASRM)

Class II B and was planned for anti-tubercular therapy, to be followed by hysteroscopic septal metroplasty once treatment was complete. This case underscores the importance of comprehensive infertility evaluation in tuberculosis-endemic regions, where coexisting congenital uterine anomalies and genital tuberculosis can pose substantial diagnostic and therapeutic challenges. Early recognition and multidisciplinary, staged management may help optimise future reproductive outcomes.

Keywords: Female genital tuberculosis; Primary infertility; Uterine septum; Bicornuate uterus; Müllerian anomaly; Tubal factor infertility; Hysteroscopy; Laparoscopy; Adenosine deaminase; Metroplasty.

Introduction

Infertility affects approximately 10-15% of reproductive-aged couples worldwide, and female genital tuberculosis (FGTB) remains a significant but often overlooked cause in developing countries ¹. FGTB is responsible for severe reproductive morbidity through tubal damage, endometrial destruction, pelvic adhesions, and impaired implantation ².

The fallopian tubes are involved in nearly 90-100% of women with genital tuberculosis, followed by endometrial involvement in approximately 50-80% of cases³. Diagnosis is often difficult because many women are asymptomatic and present solely with infertility⁴.

Congenital uterine anomalies are independently associated with adverse reproductive outcomes. Septate uterus is the most common Müllerian anomaly and is associated with infertility, recurrent pregnancy loss, and adverse obstetric outcomes⁵. The coexistence of genital tuberculosis and a uterine anomaly is uncommon and may complicate both diagnosis and fertility management. We report this case of primary infertility in a young woman found to have a uterine septum, pelvic adhesions, bilateral tubal block, and findings suggestive of genital tuberculosis, in order to highlight the diagnostic approach and staged management required when these two conditions coexist.

Case Report

Chief Complaint and History

A 28-year-old woman, married for four years in a non-consanguineous marriage, presented with primary infertility of three years duration. She reported regular coitus 2-3 times per week, not associated with dyspareunia. Her husband had no history of premature ejaculation or erectile dysfunction. Her menstrual cycles were regular, occurring every 28-30 days with flow lasting 3-4 days, without clots or significant dysmenorrhea. Her medical, surgical, and family histories were unremarkable, and she reported no known drug allergies.

Clinical Features

On examination, the patient was calm, conscious, and well oriented, with stable vital signs (pulse rate 80 beats/min, blood pressure 118/72 mmHg, temperature 98.4°F, respiratory rate 16/min, SpO₂ 98% on room air).

Systemic examination of the chest and cardiovascular system was unremarkable. Breasts were soft and non-tender bilaterally, and the abdomen was soft and non-tender. Per speculum examination showed a pinpoint external os with a healthy-looking cervix. Per vaginal examination revealed a retroverted uterus with free bilateral fornices.

Investigations

Pelvic ultrasonography demonstrated two divergent uterine horns with a wide fundal cleft and two distinct endometrial linings, each approximately 5 mm in thickness, sharing a single cervix (cervical length 1.7 cm), raising suspicion of a bicornuate versus septate uterus. Both ovaries appeared normal, and no free fluid was noted in the pouch of Douglas.

Baseline haematological and biochemical parameters (haemoglobin, renal and liver function tests, serum electrolytes) were within normal limits. Serology for HBsAg, HCV, HIV, and VDRL was non-reactive.

Patient was admitted and underwent Diagnostic laparoscopy with bilateral chromopertubation and hysteroscopic-guided endometrial biopsy for definitive evaluation.

Hysteroscopic Findings

Hysteroscopy revealed a normal external os and endocervical canal, with two internal ostia visualised at the upper end and an intervening uterine septum (Figure 1). The right endometrial cavity was tubular in configuration with a normal right tubal ostium. The left endometrial cavity was comparatively smaller, and the left ostium could not be clearly visualised.

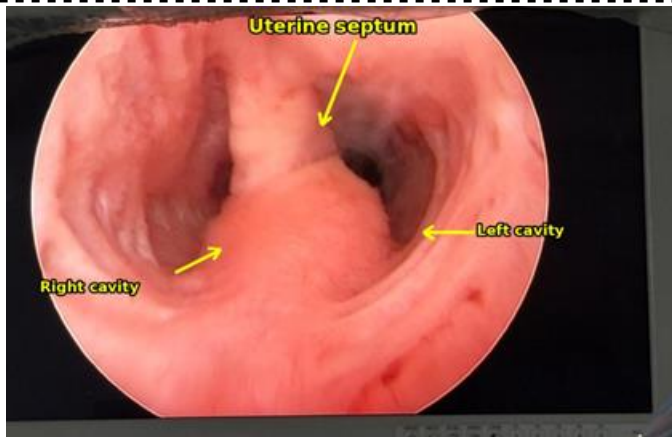


Figure 1: Diagnostic hysteroscopy showing a uterine septum dividing the endometrial cavity into two distinct compartments, with the right cavity appearing tubular and larger than the comparatively smaller left cavity.

Laparoscopic Findings

Diagnostic laparoscopy revealed multiple fan-shaped, flimsy adhesions between the omentum and the anterior abdominal wall. Adhesions were also noted on the undersurface of the liver, resembling the 'violin-string' adhesions of Fitz-Hugh-Curtis syndrome (Figure 2). The uterus appeared retort-shaped with an indentation at the fundus. Flimsy adhesions were also present within the pouch of Douglas, which appeared fixed (Figure 3). Bilateral chromopertubation demonstrated absence of dye spill bilaterally, confirming bilateral tubal occlusion.

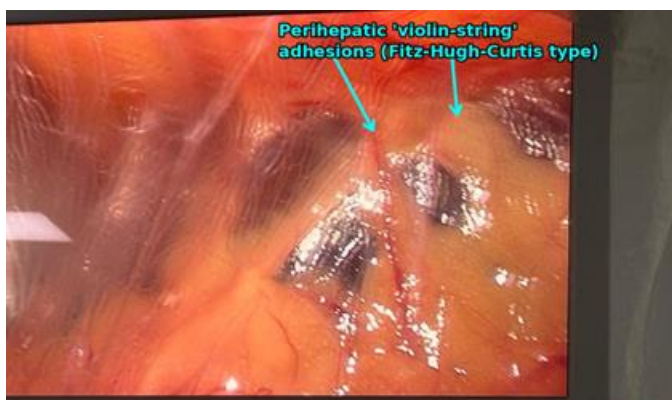


Figure 2: Diagnostic laparoscopy showing 'violin-string' perihepatic adhesions between the liver surface and the anterior abdominal wall/diaphragm, suggestive of Fitz-Hugh-Curtis-like perihepatitis.

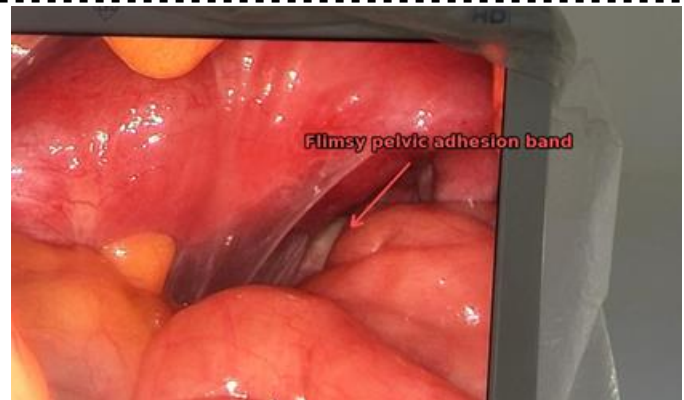


Figure 3: Diagnostic laparoscopy showing a flimsy adhesion band within the pouch of Douglas, contributing to pelvic adhesive disease

Further Evaluation

Peritoneal fluid was sent for adenosine deaminase (ADA) estimation and CBNAAT (Cartridge-Based Nucleic Acid Amplification Test), and an endometrial biopsy was obtained for histopathological examination (HPE). Peritoneal fluid ADA was elevated at 27.7 U/L (suspect range 18.0-23.0 U/L; positive range 0-23 U/L for body fluid, as per laboratory reference), supporting a probable diagnosis of genital tuberculosis.

Diagnosis

Based on the clinical, radiological, hysteroscopic, laparoscopic, and biochemical findings, a final diagnosis of a 28-year-old nulligravida with primary infertility, lean PCOS (polycystic ovary syndrome), and a bicornuate/septate uterus with probable genital tuberculosis (ASRM Class II B) was made, on post-operative day 2 following diagnostic laparoscopy with bilateral chromopertubation and hysteroscopic-guided endometrial biopsy.

Treatment Plan and Prognosis

The patient was counselled regarding the likely multifactorial aetiology of her infertility, involving a congenital uterine anomaly, tubal factor infertility, and probable genital tuberculosis. She was observed

postoperatively and discharged with advise to follow-up in the gynaecology outpatient clinic.

The definitive management plan was for the patient to be started on anti-tubercular therapy (ATT); following completion of ATT and clinical reassessment, hysteroscopic septal metroplasty was planned to correct the uterine septum and improve her reproductive prognosis.

Discussion

Female genital tuberculosis remains a major cause of infertility in endemic regions. The disease frequently affects the fallopian tubes, resulting in fibrosis, hydrosalpinx, and tubal obstruction^{2,3}. Bilateral tubal occlusion, as observed in this patient, is among the most common mechanisms of infertility associated with FGTB⁶.

Laparoscopic findings suggestive of genital tuberculosis include pelvic adhesions, tubal distortion, hydrosalpinx, caseous deposits, and perihepatic adhesions⁷. The perihepatic 'violin-string' adhesions identified in our patient (Figure 2) increased suspicion of chronic pelvic inflammatory disease secondary to tuberculosis, analogous to the Fitz-Hugh-Curtis phenomenon classically described with chlamydial and gonococcal infection.

ADA measurement in peritoneal fluid has emerged as a useful adjunctive diagnostic tool, particularly in resource-limited settings. Elevated ADA levels reflect activation of cell-mediated immunity and may support the diagnosis of tuberculosis when interpreted alongside clinical and laparoscopic findings⁸.

Congenital uterine anomalies represent another independent contributor to infertility. Differentiation between bicornuate and septate uterus is crucial because reproductive outcomes and treatment options differ significantly⁹. The hysteroscopic appearance of a

dividing septum with two endometrial cavities sharing a single cervical canal (Figure 1) was consistent with a septate configuration. Septate uterus can be effectively treated with hysteroscopic septal resection, which has been associated with improved reproductive outcomes¹⁰. The coexistence of genital tuberculosis and uterine septum creates a complex fertility scenario. Treatment must prioritise eradication of infection before undertaking reconstructive surgery. Following adequate anti-tubercular treatment, reproductive planning may include hysteroscopic metroplasty and, depending on residual tubal function and endometrial status, assisted reproductive techniques¹¹. This staged approach, rather than simultaneous surgical correction, is consistent with current recommendations for the management of coexisting tuberculous pelvic infection and structural uterine anomalies.

Conclusion

This case emphasises the importance of meticulous evaluation of infertile women in tuberculosis-endemic settings. The coexistence of uterine septum, bilateral tubal occlusion, pelvic adhesions, and probable genital tuberculosis presents a significant diagnostic challenge. Combined hysteroscopic and laparoscopic assessment remains invaluable for establishing the diagnosis, and a staged treatment approach — anti-tubercular therapy followed by hysteroscopic septal metroplasty — is recommended to guide fertility-preserving management and optimise future reproductive outcomes.

Abbreviations

FGTB: Female genital tuberculosis; PCOS: Polycystic ovary syndrome; ASRM: American Society for Reproductive Medicine; ADA: Adenosine deaminase; CBNAAT: Cartridge-based nucleic acid amplification test; HPE: Histopathological examination; ATT: Anti-tubercular therapy.

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