Gynecol Surg (2005) 2: 93–95
DOI 10.1007/s10397-005-0093-9

ORIGINAL ARTICLE

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The use of prophylactic antibiotics in the tension-free vaginal tape procedure: is it indicated?

Received: 11 December 2004 / Accepted: 10 February 2005 / Published online: 23 March 2005

Abstract The tension-free vaginal tape (TVT) surgical procedure is well established in the treatment of female urinary stress incontinence. The operation is based on a midurethral Prolene tape support. TVT is accepted as an easy-to-learn and safe minimally invasive surgical technique. Postoperative infections have been described following other surgical methods for correcting female urinary stress incontinence. Hence, prophylactic antibiotics are commonly also used in TVT to minimise this surgical complication. The aim of this analysis was to evaluate the occurrence of infection in relation to TVT and the need for prophylactic antibiotics. Out of 524 patients undergoing TVT and followed for up to 68 months, only three suffered surgical field infections within the postoperative period. The three infective processes developed with a background of retropubic haematoma formation. The literature is reviewed, and the justification for prophylactic antibiotics in the TVT operation is discussed.

Keywords Prophylactic antibiotics · Tension-free vaginal tape

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Introduction

The tension-free vaginal tape (TVT) procedure for surgical correction of female urinary stress incontinence was described by Ulmsten et al. [1]. Being minimally invasive with a high success rate and a low complication rate, it rapidly became very popular [1–4]. Common complications of previously used operations for treating urinary stress incontinence, such as intraoperative blood loss, pelvic and abdominal organ injury, postoperative appearance of detrusor instability, dyspareunia, and urethral erosion, are rare in the TVT era[1–3, 5]. Postoperative infections were reported to complicate up to 8.8% of former types of corrective female urinary incontinence surgery [5], whereas the post-TVT infection rate was reported to be less than 1% of operated patients[1–3].

However, prophylactic antibiotics are commonly administered for the TVT procedure based on empirical grounds [1]. Postoperative infection in the "clean-contaminated" [6] TVT surgical field carries the ominous hazard of spreading to the neighbouring tissues and forming pelvic abscesses. Hence, as widely recommended for operations similar to the TVT that involve potential exposure to bacteriologic pathogens [7–16], prophylactic antibiotics are used routinely to minimise the possibility of TVT-related infections. Reported here are three patients diagnosed with post-TVT surgical field infections [17]. The issue of prophylactic antibiotics in the TVT procedure is discussed.

Materials and methods

Patients suffering from urinary stress incontinence, diagnosed both clinically and urodynamically, were referred for the TVT procedure. All were given 1 gram of intravenous Monocef (cefonicid, Beecham Healthcare) 1 hour before surgery. The patients were evaluated for the existence or absence of surgical field haematomata or infection on the postoperative day and 1 month subse-

quently; this was achieved by meticulous pelvic examination and body temperature measurement. Blood count, midstream urine specimen, and pelvic ultrasound were not performed. When discharged, the patients were strictly instructed to notify the medical staff immediately if their body temperature exceeded 38.0°C and if any swelling or pain appeared in the lower abdomen or at the vaginal opening.

Results

A total of 524 TVT procedures were performed from April 1998 through December 2003. Of these, 298 patients (57%) had significant pelvic floor relaxation necessitating anterior and/or posterior colporrhaphy, and 39 (7%) had vaginal hysterectomies concomitant with the TVT. Of the 524 patients undergoing TVT, three (0.57%) presented with postoperative surgical field infection. All three had had TVT as primary urinary stress corrective surgery in which no bladder penetration was noted. One of the three patients had anterior and posterior colporrhaphy in addition to TVT. Presenting complaints were body fever of 38.8–39.0°C and suprapubic pain. These commenced on the postoperative day in one patient, on the 7th postoperative day in another, and on the 14th postoperative day in the other. The haemoglobin level was unchanged in the first and third patients but had dropped by 1.5 g% in the second. Leukocyte count had increased to 18,000 mm^{-3}. Suprapubic swelling and tenderness were found, but vaginal examination was normal in all three patients. Ultrasonic screening revealed retropubic accumulation of fluids (3×3×4, 2×2×3, and 2×7×3 cm, respectively) engulfing the TVT arm. Suprapubic percutaneous aspiration revealed pus (25, 5, and 30 ml, respectively). No drain was left in place. *Staphylococcus auricularis* was cultured from the first patient and group C *Streptococcus* from the other two. Therapeutic management included hydration and intravenous infusion of gentamicin 240 mg, metronidazole 1,500 mg, and amoxicillin 3,000 mg per 24 h. Body temperature returned to normal 24–30 h after haematoma evacuation and administration of antibiotics; the patients fully recovered in 3–4 days. On monthly follow-up, no retropubic free fluid was found either on physical examination or ultrasonic scan. The three patients remained continent, and no deleterious sequelae such as pain or urge incontinence were recorded. All other patients reported neither signs nor symptoms of surgical field infective episodes throughout the study period; this was addressed directly and recorded at the postoperative follow-up meetings.

Discussion

The TVT operation, being a vaginal procedure, is by definition a nonsterile one [6]. Infectious complications may occur even though meticulous sterile techniques are used [17]. The TVT operation might be complicated by occasional haematomas, which are prone to infection. Spread of the infective process to the surrounding pelvic tissues might lead to serious conditions such as pelvic fasciitis. The use of prophylactic antibiotics in operations that carry similar infective hazards, such as the TVT procedure, is well established [7–16]. Hence, based on empirical grounds only, prophylactic antibiotics are widely used in TVT even though the efficacy of their administration has not been demonstrated. Nevertheless, three cases of post-TVT operative infections have been recorded here. Fever and suprapubic pain were the leading signs for post-TVT infected haematoma in these three patients. Ultrasonographic study helped in determining the extent of the haematoma and guided the percutaneous evacuation. Early diagnosis and treatment, including aspiration and intravenous broad-spectrum antibiotics, were the keys to providing good control of the infective process and to maintaining the operative therapeutic achievements.

Some might feel that removing the tape in the presence of an active infection would be appropriate for shortening recovery. But because it is relatively large and loosely knit, TVT has been acknowledged neither to harbour bacteria nor to interfere with the antiinflammatory processes. Left in place, the tape allows preservation of the patient's continence. The question of whether prophylactic antibiotics are really indicated for TVT operations remains unanswered. Because the incidence of post-TVT infection is very low, the number of patients needed for an appropriate double-armed prospective study to resolve this topic is unreasonably high. The author's opinion is that prophylactic antibiotics should be administered before TVT, as the overall price for doing so is much lower than the overall price for treating a post-TVT-infected patient.

Conclusions

Post-TVT infection is rare but potentially morbid. Early recognition and treatment are mandatory for controlling and eliminating the infective process and for preserving the operative therapeutic results. Prophylactic use of antibiotics might reduce this chance of infection, which exists in TVT as in other types of urinary stress corrective surgery.

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