A case report of the preferred indication for the Zephyr (ZSI 375) artificial urinary sphincter

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ABSTRACT

To evaluate the safety and efficacy of one piece urinary sphincter (ZSI 375) in patients with history of multiple lower abdominal surgeries. A 26 year old man presented with severe stress urinary incontinence since 19 years ago. At the age of 7, he suffered severe pelvic injuries due to a car accident and underwent multiple surgeries and a very large skin graft in the lower abdominal area. We used ZSI 375 as a one-piece urinary sphincter to prevent visceral injury because of scar tissue dissection. No complication was observed during one year follow up.

1. Introduction

Management of male urinary incontinence is an important and interesting issue for urologists due to the increasing prevalence. Although urinary incontinence is not a life-threatening problem, it can affect social, occupational, psychological and physical aspects of patients’ life style.1

The artificial urinary sphincter (AUS) was first introduced in 1973 for management of male stress urine incontinence. An AUS is a device that works like a natural urinary sphincter which is made up of three parts: the first part is a urethral cuff that wraps around the urethra to control the urine flow. The second part is a pump that moves fluid into or away from the urethral cuff which is placed in the scrotum. And the third part is a balloon that holds the same fluid as the cuff. It may place under abdominal (belly) muscles in three pieces sphincters (AMS 800) or in the scrotum beside the pump in one piece sphincters. ZSI 375 (Zephyr Surgical Implants, Geneva, Switzerland) is a kind of sphincter that has no abdominal reservoir so as to reduce the operating time and to avoid abdominal incision and dissection in scarred abdomen (Fig. 1).4

In this case report we present a 26 year old man with severe stress incontinence since the age of 7 because of severe pelvic injury caused by a car accident leading to multiple abdomino-pelvic surgeries and also large abdominal skin graft. Due to severe abdominal scarring and the risk of abdominal incision, we used ZSI 375 as a one piece urine sphincter to control the urinary incontinence. We describe the safety and efficacy of ZSI 375 in such patients.

2. Case report

A 26 year old man presented with severe stress urinary incontinence since 19 years ago. At the age of 7, he suffered severe pelvic injuries due to a car accident. At that time, the patient underwent orthopedic surgery, pelvic bones fixation, bladder repair, urethroplasty and a very large skin graft in the lower abdominal area (Fig. 2). When he referred to our office, abdominal and perineal surgery scars were evident because of those surgeries (Fig. 3). In the primary evaluation, he had a normal complete blood count, negative urine culture and the serum creatinine was 0.9 mg/dl. In ultrasound study, bladder volume was 400 cc and no hydronephrosis or post-voiding residue was detected. No evidence of obstruction was detected in retrograde urethrogram and cystoscopic evaluation. Urine incontinence was obviously positive during cough stress test. After sphincter dysfunction was identified as the cause of urinary incontinence, the patient was candidate for placement of urinary sphincter. Due to the presence of large abdominal scars and skin graft, we decided to use ZSI 375 as a one-piece urinary sphincter to prevent visceral injury because of scar tissue dissection.

Written informed consent was obtained from the patient for publication of this case report and accompanying images. Under general anesthesia in the lithotomy position, we used perineal incision for cuff placement and scrotal incision for pump and tank placement. The operation time was 70 minutes. The patient was discharged from the hospital three days after surgery. No complication was observed during one year follow up. The patient urinates well, ultrasound study shows no post-voiding residue and urine culture was negative at 1, 2, 4, 6 and 12 months after implantation. The patient uses 0 or 1 pad, daily (social

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continent).

3. Discussion

An artificial urinary sphincter is the gold standard treatment for persistent moderate to severe urinary incontinence. Conventionally, AMS 800 (Boston Scientific, USA) was used to control bladder outlet as a three pieces sphincter. ZSI 375, as a one piece sphincter, has a number of innovative features to answer AMS 800 lacks. Problems which are accompanied with AMS 800 are including complexity of preparation and procedures and no possibility to readjust the cuff in case of urethral atrophy. ZSI 375 has been developed to overcome the lack of AMS 800. It can reduce failure of leaking connectors and decrease preparation time. Pump unit and cuff are connecting through kink-resistant tubing. The size of pump unit which is placed in the scrotum is similar to the size of penile AMS implant pump. Due to no abdominal reservoir, it can minimize the risk of bladder or intestinal damage and reduce the operating time.

The traditional two-incision technique of abdominal incision for pump and pressure regulating balloon and perineal incision for cuff placement is the most common technique to surgically place a three-pieces artificial urinary sphincter. The scrotal one-incision approach was invented by Wilson 20 years ago and was aimed at making the implantation of a sphincter quicker, easier and safer for the occasional implanter. In this method, external inguinal ring pulled cephalad by infant deaver and scissors pierce transversalis fascia (floor of inguinal canal) to access the space of retzius. In this report, according to the history of multiple abdomino-pelvic surgeries and large surgical scar and skin graft, placement of the three-pieces sphincter reservoir under abdominal muscles through abdominal incision or even scrotal incision by piercing transversalis fascia seems inappropriate. Dissection the scar tissue in this area, in a patient with history of multiple surgeries may injure the bladder and even the intestine and it would be better to use one-piece sphincter to keep this area intact. To our best knowledge, it is the first time that it is emphasized to use one piece urinary sphincter (ZSI 375) in patients with history of lower abdominal surgery and presence of scar tissue and skin graft. And it seems that this procedure is a safe and easier technique for such patients.

4. Conclusion

In this report, we presented a patient with history of multiple abdomino pelvic surgeries and large scar and skin graft in lower abdomen area, suffered from severe stress urinary incontinence. We emphasize that, it would be better to use one piece urinary sphincter (ZSI 375) to prevent probable damage to the bladder and intestine in such cases.
Declaration of competing interest

All authors declare that they have no conflict of interests.

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