



Can Ambicor® Penile Prosthesis be Used in One Piece in Patients with Inadequate Cavernous Structure? Our Experience of Two Cases

Ambicor® Penil Protez, Kavernoöz Alan Yetersizliği Olan Olgularda Tek Parça Olarak Kullanılabilir mi? İki Olguluk Tecrübe

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ABSTRACT

Penile prosthesis implantation, which is practiced with high satisfaction and success rates in patients with erectile dysfunction today, is an invasive procedure carried out by implanting various models of the prostheses into the cavernosal tissue. Penile prosthesis implantation may sometimes prove difficult in cases with small penis in size and diameter. In this article, we present the method we used in two patients in whom two-pieces Ambicor® penile prosthesis implantation was planned but could not be carried out due to the insufficient size and diameter of the penile cavernous structures.

Keywords

Erectile dysfunction, penile prosthesis, Ambicor®

ÖZ

Günümüzde erektil disfonksiyonlu hastalarda yüksek memnuniyet ve başarı oranları ile uygulanan penil protez implantasyonu çeşitli modellerdeki protezlerin kavernoöz doku içerisine yerleştirilmesi şeklinde yapılan invaziv bir işlemdir. Boyut ve çap olarak küçük penisli olan olgularda penil protez implantasyonu uygulanması kimi zaman zorluklar oluşturabilir. Biz bu yazımızda iki parçalı Ambicor® penil protez implantasyonu için operasyona aldığımız ancak penil kavernoöz yapılarının boy ve çap olarak yetersiz olmasından dolayı protez implantasyonu tam olarak yapılamayan iki olguda uyguladığımız yöntemi sunduk.

Anahtar Kelimeler

Erektil disfonksiyon, penil protez, Ambicor®

Introduction

In the treatment of erectile dysfunction, penile prosthesis implantation is an indispensable treatment practiced in selected patients who have not benefitted from medical treatments, such as phosphodiesterase inhibitor drugs and intracavernosal injections, and who have not used these medication therapies due to their side effects. Although implantation of the prostheses available in various models is an invasive procedure, it is a satisfactory surgical method for both the patient and the partner when used in suitable patients. Two-piece inflatable Ambicor® penile prostheses of American Medical System (AMS) include two cylinders and a pump. When the pump is activated, the fluid moves from the reservoir to the cylinders and becomes rigid. Bending the cylinders from the midsection ensures the prosthesis to return to flaccid state. In cases with insufficient penis size and

diameter, two-piece Ambicor® penile prostheses of AMS may be implanted with a different modification like we made.

Case Presentation

Case 1

A 58-year-old patient presented to our clinic with the complaint of erectile dysfunction for the past seven years. The patient, aside from suffering insulin-dependent diabetes mellitus for ten years, did not have any other comorbidities and received medical therapy with phosphodiesterase type 5 inhibitor and intracavernosal medications from which he did not benefit. International Index of erectile function-5 (IIEF-5) (1) score was 6. The fasting blood glucose and hemoglobin A1c (HbA1c) levels in the patient using insulin for five years were regulated. Penile color Doppler ultrasonography was consistent with mild venous leakage.

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Case 2

A 64-year-old patient presented to our clinic with the complaint of erectile dysfunction for six years, which could not have been solved by medical therapies. The patient suffering insulin dependent diabetes mellitus and hypertension for thirteen years had an IIEF-5 score of 5. The fasting glucose and HbA1c levels in the patient were found to be normal. Penile color Doppler ultrasonography confirmed arterial and venous insufficiency.

Luteinizing hormone, prolactin, testosterone, and thyroid hormone levels in both patients were assessed normal. Likewise, psychological causes of erectile dysfunction were ruled out by performing a preoperative psychiatric evaluation in both patients. Thereupon, by deciding on performing penile prosthesis implantation, the patients were informed about the types of prostheses and their advantages and disadvantages in detail. After dilating the cavernous tissues with bougies, two-piece Ambicor® penile prosthesis was tried to be implanted into the spaces formed. However, since the cavernous tissues were very thin and short in diameter, two pieces of the prosthesis could not be implanted into the dilated cavernous spaces together. Therefore, the tubule of the one piece of the Ambicor® prosthesis was clipped and cut, and it was transformed into a one-piece inflatable prosthesis. After cutting and dilating the intracavernosal septum, one-piece inflatable Ambicor® penile prosthesis was implanted into the intracavernosal space, and the operation was completed properly (Figure 1, 2, 3). The patients were discharged on postoperative day 3 and were advised not to have sexual intercourse for two months. The results of first week, first month, and second month postoperative follow-up of the patients were normal. The implanted penile prostheses were activated at the end of the second month and observed to be functioning normally. In the first year follow-up, the patients were evaluated with patient assessment form of modified Erectile Dysfunction Inventory of Treatment Satisfaction (2) and it was found out that the patients could use the prostheses without any problem and that both patients and their partners were fully satisfied.

Discussion

Penile prostheses have improved parallel with the developments in technology, and the increase in their quality and reliability has

provided less complications and more patient satisfaction leading to their frequent use in patients with erectile dysfunction.

There are three types of penile prostheses including semi-rigid (malleable, non-inflatable, non-hydraulic), mechanic and inflatable (inflatable, hydraulic) ones. The advantages of semi-rigid prostheses include easy implantation, the patient not being dependent on hand skill, low risk of mechanic failure, and being cheap; whereas the disadvantages include the penis being constantly firm not similar to normal erection and flaccidity, being difficult to conceal and having a high risk of erosion. Inflatable prostheses provide a more natural appearance to the penis when in flaccid state. They ensure rigidity as much as malleable prostheses do in erective state. Two distal pieces of two-piece inflatable prosthesis of AMS (Ambicor®) are made of rigid silicon. The cylinders of these prostheses are connected to a scrotal pump. When this pump which is implanted into the intrascrotal cavity is activated, the fluid transfers from mid-section of the cylinder into the central chambers and form rigidity. The prosthesis is deflated when the mid-section of the prosthesis is bent and the fluid moves



Figure 2. Both cavernous corpus were dilated together and the prosthesis was implanted



Figure 1. Both cavernous corpus were dilated together and the prosthesis was implanted



Figure 3. One piece of the prosthesis formed with the help of hemoclips by cutting the intracavernosal septum was implanted into the penis

back to the cylinder reservoirs. Three-piece inflatable prostheses are more sophisticated devices than semi-rigid prostheses with higher patient satisfaction. However, the disadvantages of these devices include the probability of mechanical failure and using more complex operative techniques during implantation. These devices consist of two cylinders implanted into the cavernous tissue; a pump placed into the scrotum, and a reservoir implanted into the Retzius cavity or the peritoneum (3). Three-piece prostheses are softer than semi-rigid or two-piece prostheses and they have a cosmetically better appearance in deflated state.

Even though patient and partner satisfaction is as high as 97% after penile prosthesis implantation, important complications seen in the perioperative and postoperative periods show that prosthesis implantation is a critical operation (4,5,6). The most important complications seen in the perioperative period is related to the urethra, bladder and bowel. Urethral injuries occur during the dilatation of the corpus cavernosum. Bladder and bowel injuries can occur during the implantation of the reservoir into the Retzius cavity blindly. Laparotomy and cystoscopy may be needed in these types of injuries (7). In addition, other complications, such as cavernous perforation, mechanical dysfunction, malposition, constant pain, and erosion can be seen. In the postoperative period, infection that can be encountered in 1.7-15% of patients is an important complication requiring the removal of the prosthesis (8,9).

There are some cases in which two-piece Ambicor prostheses are preferred. These cases include patients having radical prostatectomy or cystoprostatectomy performed, patients whose Retzius cavity is peritonealized and whose reservoir is likely to cause erosion to the adjacent organs, patients who had undergone or who are still a candidate for renal transplantation, patients having bilateral inguinal herniography performed (especially the ones using mesh), and patients who are candidates for penile prosthesis implantation due to erectile dysfunction caused by spinal cord damage. In these patients, enough space cannot be provided for the reservoir, resulting in spontaneous deflation of the prosthesis (10).

Penile prosthesis implantation can be performed in Peyronie's disease accompanied by erectile dysfunction. Tunica albuginea incision and excision can be used in cases with serious curvature and plaque. Sliding technique, where tunical excision and grafting are performed on dorsal-ventral penis, has been described in patients whose corpus cavernosum is short and has been modified to become suitable for penile length prosthesis implantation (11). The studies on this issue in the literature are on cases that are accompanied by Peyronie's disease (11,12,13,14,15). Peyronie's disease did not accompany in our cases, however, only one of the cylinders of the prosthesis could be implanted due to the fact that the penile length of our cases was short and the diameter of the corpus cavernosum was totally insufficient. Using grafting techniques in patients in whom the diameter of corpus cavernosum is totally insufficient is non-effective for the use of the prosthesis and is a risky situation in terms of its technical application. Therefore, one piece of a two-piece penile prosthesis can be disconnected and inflated and be used as a one-piece penile prosthesis with high success and satisfaction rates.

In our clinic, during the operation of two patients suitable for two-piece Ambicor® penile prosthesis implantation, it was observed that the penile corpus cavernosum was small in size and diameter. The

smallest size of two-piece Ambicor® penile prosthesis was tried to be implanted into the corpus cavernosum implanted into the corpus cavernosum dilated with bougie, however, it was not possible. Implanting semi-rigid or three-piece inflatable penile prosthesis was considered, but it could not be implanted as it was not covered by the social security institution. Accordingly, by blocking it with hemoclips, we cut the tube of one of the cylinders of the two-piece Ambicor® penile prosthesis which was implanted into the cavernous tissue. A one-piece inflatable Ambicor® penile prosthesis was obtained ultimately and it could be easily implanted into the dilated penile cavernous tissues by impairing in the intracavernosal septum. During the operation, it was observed that the activated prosthesis provided sufficient rigidity in the penis and maintained a position comfortably inside the penis. During the follow-up, the patients stated that they were using the prostheses effectively and with high satisfaction which ultimately demonstrated that this method could be applied easily with Ambicor® two-piece penile prostheses in compulsory cases.

Prosthesis implantation is a method that can be employed with high satisfaction levels in suitable patients. Explaining the types of prosthesis, implantation methods, potential complications, and the advantages and disadvantages of the prosthesis to be implanted to the patient and the partner preoperatively can eliminate the problems regarding patient and partner satisfaction which will be encountered in the postoperative period. While choosing either semi-rigid or inflatable prostheses, we are of the opinion that it would be beneficial to use the products of reliable brands that employ advanced technology in order to reduce complication risks. Besides, it will be more appropriate if the patient and the physician decide on the type of the prosthesis by considering the socio-cultural quality and economic level of the patient.

Both cases presented in this study were patients with organic erectile dysfunction and insufficient penis size and diameter, in whom two-piece Ambicor® prosthesis implantation was not possible. In patients with a small penis, in whom two-piece Ambicor® prosthesis implantation is planned, this method can be performed successfully if it is mandatory. While deciding on penile prosthesis implantation and during the procedure, it would be wise for the urologist to take these possibilities into consideration.

Ethics

Informed Consent: Consent form was filled out by all participants.

Peer-review: Internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: Fatih Akdemir, Önder Kayıgil, Emrah Okulu, Concept: Fatih Akdemir, Önder Kayıgil, Emrah Okulu, Design: Fatih Akdemir, Önder Kayıgil, Emrah Okulu, Data Collection or Processing: Fatih Akdemir, Önder Kayıgil, Literature Search: Fatih Akdemir, Önder Kayıgil, Writing: Fatih Akdemir, Önder Kayıgil.

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