# A History of the Penile Implant to 1974

Hernan Carrion, MD,[1] Daniel Martinez, MD,[2] Justin Parker, MD,[2] Tariq Hakky, MD,[2] Michael Bickell, DO,[2] Alexander Boyle, MD,[2] Luke Weigand, MD,[2] and Rafael Carrion, MD[2]

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## INTRODUCTION

Impotence has plagued mankind for over a millennium. One of the earliest references on record was found in India, in the *Sushruta Samhita,* around the eighth century BC.[1] Historically, it was an ailment believed to have its roots in psychogenic, religious, and supernatural etiologies. Therefore, the treatment of impotence involved the use of potions, aphrodisiacs, ointments, and prayers, which to this day still play a large role in certain cultures. This mindset of impotence secondary to non-organic causes remained the mainstay in the scientific community until well into the 20th century. In fact, in the early to mid-1900s, psychologists or psychiatrists treated impotence more than 95% of the time, often with the use of empiric treatment with testosterone. As David Stafford-Clark,[2] described in his article, "The Etiology and Treatment of Impotence," published in 1954, "A dogmatic, but reasonably safe generalization would be that at least 90% of all cases of impotence, relative or complete, are psychogenic in origin." Before 1974, very few urologists were involved in the management and treatment of erectile dysfunction (ED), because the underlying pathophysiology of impotence remained to be elucidated.

The lack of interest among urologists in the treatment of patients with ED was reflected in the participation at the annual American Urological Association (AUA) meetings. In the annual AUA meeting in 1971, Robert Pearman[3] presented the only paper related to the surgical treatment of ED using a penile prosthesis. In 1972, there also was only one paper by Morales et al[4] on this same topic, and in 1973 there was only one paper by Reginald Hancock on his experience with prostheses. It was in 1974 that the birth of a new era in the treatment of impotence began with the advent and widespread use of two safe and efficacious penile prostheses (Table 1).

In this article, we describe the history of surgical treatment of ED by concentrating on the evolution of the penile prosthesis. This history is composed of two parts, before 1974 and the landmark year of 1974. We refer to this as the "old era" of the penile prosthesis and the birth of the "new era" of the penile prosthesis, respectively.

## BEFORE 1974

After a review of the literature, it was evident that there were few pioneers using penile prostheses to correct organic impotence in patients during the first half of the 20th century. N.A. Bogoras of Germany was one such pioneer. In 1936 he described his technique of using rib cartilage for penile reconstruction in war victims with disfiguring amputation-type injuries to the phallus.[5,6] He believed that it was not only necessary to re-create the missing penis, but that its function should be restored. He described using rib cartilage as an os penis for the patient to have an erection and engage in sexual activity (Figure 1). The rationale for using an os penis for sexual reconstruction was derived from observations of successful evolutionary development in certain animals such as the walrus, whale, gibbon, and orangutan. These animals possess an os penis to provide the necessary rigidity to permit proper penile penetration secondary to poorly developed erectile tissue. Bogoras theorized he could create an os penis for these men to restore the form and function of a human penis.

Bogoras' contribution was expanded on and enhanced by Frumkin[7] in 1944; a summary, as written in his article, of his four-step operation follows:

1. Formation of an abdominal skin tube into which rib cartilage is inserted
2. Transfer of the proximal pedicle of the tube and implantation of the cartilage into the remnants of the cavernous bodies
3. Division of the distal end of the tube and formation of the penis
4. Reconstruction of the urethral canal

In his article, Frumkin went into detail to describe the surgical technique. In the first stage, a harvested cartilage graft taken from the eighth or ninth rib was inserted into a phallic tubularized skin flap made from the lateral abdominal wall. The second stage, performed 3 to 4 weeks later, consisted of implanting the cephalad portion of the cartilage-tubularized skin flap into the remains of the cavernous bodies after they were carefully mobilized. The upper pedicle of the tube was severed and mobilized down to the cavernous bodies. A small portion of the exposed cartilage (approximately 1 cm) was inserted into a pocket created

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[1]University of Miami, Miami, FL, USA;

[2]University of South Florida, Tampa, FL, USA



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**Table 1.** AUA annual meetings from 1971 through 1974 with submissions related to the surgical treatment of erectile dysfunction

| 66th AUA meeting, 1971 | 67th AUA meeting, 1972 | 68th AUA meeting, 1973 | 69th AUA meeting, 1974 |
|---|---|---|---|
| Robert Pearman, Insertion of a Silastic Penile Prosthesis for the Treatment of Organic Sexual Impotence | P.A. Morales et al, Penile Implant for Erectile Impotence | Reginald Hancock, Experience with Penile Prosthesis | M.P. Small, Carrion Small-Carrion Penile Prosthesis: New Implant for Management of Impotence |
| | | | M.P. Small, Carrion Small-Carrion Penile Prosthesis |
| | | | F.B. Scott et al, Management of Erectile Impotence: Use of Implantable Inflatable Prosthesis |

AUA = American Urological Association.

midline between the stumps of the cavernous bodies. Then, the pedicle of the skin flap and the cavernous bodies were fixed together. Three to 5 weeks lapsed before the third stage of the procedure. This stage consisted of dividing the distal pedicle of the tube, freeing the flap and cartilage, and subsequent formation of a new phallus. The fourth stage of the procedure consisted of the creation of the new urethra and attaching it to the acquired hypospadias of the new phallus. Frumkin described multiple modifications to his technique, including a flap created by the anterior surface of the scrotum, a flap from the inner forearm, and an abdominal graft. Frumkin reported good outcomes consisting of restoration of a normal-appearing male penis with adequate sexual function; however, he did not report long-term follow-up in these patients.

In 1947 Bergman et al,[8] using the technique described by Bogoras and Frumkin, also performed phallus reconstruction using rib cartilage to allow for rigidity and sexual intercourse. He described a four-stage procedure that required 9 months for its completion (Figure 2). One difference described in this technique by Bergman et al was the diversion of the urinary stream by cystotomy during the second stage (which was performed 6 weeks after the first stage), before transplantation of the tube graft with cartilage to the penile stump. Bergman et al reported that patients could urinate normally and enjoy sexual gratification with coitus 4 months after completion of the surgery. Their patients reported return of sensation including pain, temperature, and pressure (Figure 3). The popularity of this technique continued for several years but was eventually abandoned because of a multitude of postoperative complications including, but not limited to, infection, extrusion, and pain. Furthermore, the cartilage often was too firm, difficult to shape, and reabsorbed over time. This gave way to the development and incorporation of synthetic materials for the development of penile implant prototypes.

## ACRYLIC IMPLANTS

Goodwin and Scott[9] were the first to describe the use of a synthetic material as an "artificial baculum" in 1952 (Figure 4). They

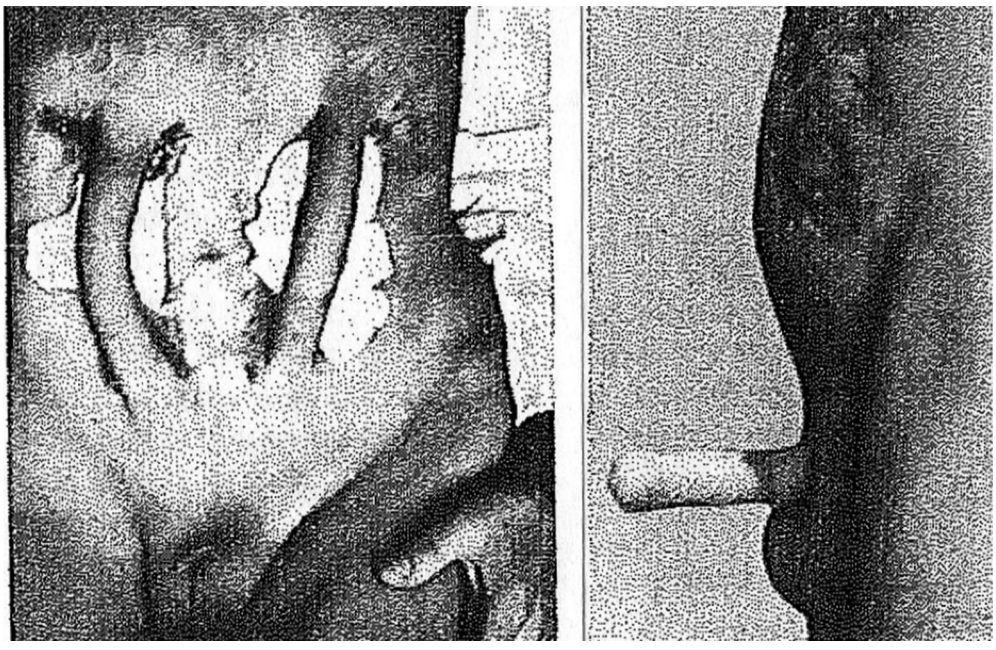

**Figure 1.** Harvesting rib cartilage and erection by os penis as shown in the 1936 article by Bogoras and Don.[5]