Review Article

A scoping review about the early implantation of penile prosthesis in refractory ischemic priapism management

Una revisión exploratoria sobre la implantación temprana de prótesis de pene en el tratamiento del priapismo isquémico refractario

Antonio José Uribe Bayona,[1] Herney Andrés García-Perdomo.[1*]

Abstract

Objective: To describe the state of the art on indications, complications, adverse effects, therapeutic options, and early vs. late insertion in patients with refractory priapism who underwent penile prosthesis implantation.

Methods: We searched MEDLINE (OVID), EMBASE, and the Cochrane Central Register of Controlled Trials (CENTRAL) from its inception to the present. Also, accessible clinical practice guidelines from North America, Europe, South Africa, and Japan.

Results: The search in the various research engines found 255 articles, of which 12 were chosen after eliminating duplicates, unrelated articles, and non-human studies.

Conclusion: The early use of penile prostheses is a viable option in the ischemic priapism refractory to first-line treatment, diminishing the risk of adverse events related to late implants and giving patients a possibility of preserving sexual function and, at the same time, providing therapy to an unusual pathology with significant comorbidity.

Keywords:
Priapism, penile prosthesis, scoping

Citation: Uribe Bayona, A, J, García-Perdomo., H, A. *A scoping review about the early implantation of penile prosthesis in refractory ischemic priapism management. Rev Mex Urol. 2024;85(3)*: 1-11

***Corresponding author:**
Herney Andrés García-Perdomo. Adress: Calle 4B # 36-00, Cali, Colombia. Universidad del Valle. Email: herney.garcia@correounivalle.edu.co

[1.] Universidad del Valle. Cali, Colombia

Accepted: June 13, 2025.
Received: November 6, 2024..

Resumen

Objetivo: describir el estado actual de las indicaciones, complicaciones, efectos adversos, opciones terapéuticas e inserción temprana vs. tardía en pacientes con priapismo refractario sometidos a implante de prótesis de pene.
Métodos: se realizaron búsquedas en MEDLINE (OVID), EMBASE y el Registro Cochrane Central de Ensayos Controlados (CENTRAL) desde su inicio hasta la actualidad. También se consultaron guías de práctica clínica accesibles de Norteamérica, Europa, Sudáfrica y Japón.
Resultados: la búsqueda en diversos motores de búsqueda arrojó 255 artículos, de los cuales 12 se seleccionaron tras eliminar duplicados, artículos no relacionados y estudios no realizados en humanos.
Conclusión: el uso temprano de prótesis peneanas es una opción viable en el priapismo isquémico refractario al tratamiento de primera línea, disminuyendo el riesgo de eventos adversos relacionados con implantes tardíos y brindando a los pacientes la posibilidad de preservar la función sexual y, al mismo tiempo, brindar terapia a una patología inusual con comorbilidad significativa.

Palabras clave: Priapismo, prótesis de pene, endoscopia

Introduction

Priapism is defined as a partial or complete erection that lasts more than 4 hours beyond sexual stimulation and orgasm or that is not related to sexual stimulation.[1–4] It is a relatively rare urological emergency worldwide; however, in some ethnic groups, such as Afro-descendants where it can reach up to 40 % male involvement.[5]

Priapism can be divided into three presentations: ischemic or low flow, arterial or high flow, and recurrent; however, ischemic presentation is the most frequent, accounting for approximately 95 % of cases.[2]

Sickle cell disease is the most common cause of priapism.[6] The prevalence of priapism in male patients with sickle cell disease (SCA) is between 30-45 %, and the associated erectile dysfunction (ED) is even higher.[7] Usually, the recurrent episodes related to this entity are characteristically self-limited, lasting less than 3 hours and starting during sleep.5,6 In the study by Mantadakis *et al.*, they found that patients could have an average recurrence of up to 15 episodes, with a mean duration of 125 minutes.[8] Although its onset is typically during childhood and adolescence, it reaches a frequency of approximately 50 % in adult patients.[6]

Those patients without response to initial management with aspiration with or

without irrigation and using alpha agonists will be candidates for other techniques for caverno-spongiosum shunt. The damage to the smooth muscle tissue is directly proportional to the duration of symptoms, and the maneuver needed to achieve the detumescence. Considering that over time, fibrosis at the level of the corpora cavernosa makes it challenging to place penile prostheses, its placement during the acute episode is postulated to preserve sexual performance and avoid one of the frequent complaints of patients for who is the shortening of the penis secondary to fibrosis.[9]

This pathology is highly sensitive to time, and the degree of associated complications and erectile dysfunction is, in a significant way, related to the time that elapses from the onset of symptoms to the decompression of the corpora cavernosa. It is closely associated with these patients' pathophysiology and histological changes. In the AUA guidelines, up to 81 % success rates are reported using intracavernous sympathomimetic injections as the first management line.10 have collaborated to create management guidelines regarding the management of priapism.[1,10,11] Management principles include the resolution of acute events, preservation of erectile function, and prevention of recurrence.[1,12] This scoping review aimed to describe the state of the art on indications, complications, adverse effects, therapeutic options, and early vs. late insertion in patients with refractory priapism who are taken to penile prosthesis implantation.

Methods

We performed this scoping review according to the recommendations of the Joanna Briggs Institute and the PRISMA-ScR STATEMENT.[13]

Eligibility criteria

Participants: We included studies with information regarding early implantation of penile prosthesis in refractory ischemic priapism management—also, pain control and safety.

Concept: We focused on the mechanisms explaining the use of penile prosthesis in this setting.

Context: We did not limit for language or setting

Exclusion criteria: studies that did not include de information about refractory ischemic priapism.

Information sources

We included clinical studies (reviews, systematic reviews, and primary studies) to respond to the objective. We searched the literature following medical subject headings (MeSh), Emtree language, Decs, and related text words. We searched MEDLINE (OVID), EMBASE, and the Cochrane Central Register of Controlled Trials (CENTRAL) from its inception to the present (Appendix 1). To ensure literature saturation, we scanned references from relevant articles identified through the search, conferences, thesis databases, Open Grey, Google Scholar, and clinicaltrials.gov. Also, accessible clinical practice guidelines from North America, Europe, South Africa, and Japan.

Appendix 1. Search strategy

("Priapism" [Mesh] OR "Priapism, familial idiopathic" OR "Penile Erection" [Majr][Supplementary Concept]) AND ("Surgical Procedures, Operative/adverse effects"[Mesh] OR "Surgical Procedures, Operative/analogs and

derivatives"[Mesh] OR "Surgical Procedures, Operative/complications"[Mesh] OR "Surgical Procedures, Operative/mortality"[Mesh]) AND ("Penile Prosthesis"[Mesh] OR "Penile Implantation"[Mesh])

Data collection

Two researchers reviewed each reference by title and abstract. Then, they scanned full texts of relevant studies, applied pre-specified inclusion and exclusion criteria, and extracted the data. Disagreements were resolved by consensus. Two trained reviewers, using a standardized form, independently extracted the following information from each article: author, publication year, study design, geographic location (origin), authors' names, title, objectives, methods, virus species, cleavage site, outcomes, funding source, and other key findings.

Synthesis of results

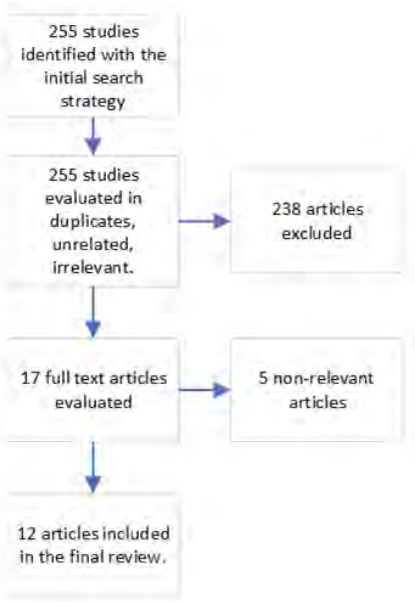
We showed the results descriptively, trying to respond to the objective. To facilitate comprehension, we also classified them under main conceptual categories.

Results

Study Selection

As a result, 255 articles were obtained, of which, after making the selection by topic, unrelated, duplicates, without relevance to the discussion, 12 articles were selected, as shown in Figure 1.

Figure 1. Flowchart



Characteristics of included studies

We included five retrospective studies, one case report, four case series, three prospective observational studies, and one retrospective cohort (Table 1).

Table 1. Characteristic of studied included

Study	Type of study	Number of patients	Inclusion Criteria	Mean Time to implant	Previuos management	Follow up time	Inflatable	Malleable	Early	Late	Implant erosion	Implant removal	Infection	Deformity	Decrease in size	Corpora cavernosa perforation	Urethral perforation	Hematoma	Reduction in penile sensitivity	Others	No complication report
Sedigh O 2011.(14)	Retrospective cohort	20 (5 underwent an implant)	Patients with ischemic and non-ischemic priapism.	5 days	Corpora cavernosa aspiration + phenylephrine injection. Winter type derivation.	N/A	4	1	x								1	5	5		
Zacharakis E. 2015. (15)	Observational retrospective	10	Patients with ischemic priapism who fail medical treatment and shunt.	188 h (7,8 d)	Medical management, shunt 5-pac (T shunt + Snake maneuver)	130d		10	x												x
Ralph DJ 2008. (16)	Observational prospective	50	Patients with ischemic priapism who fail medical treatment and shunt.	209 h	N/A	15 m (4-60)	7	43	x		3	3	3								
Salem EA 2010. (17)	Observational prospective	12	Patients with ischemic priapism who fail medical treatment and shunt.	120h	Winter in 3 pac and Al-ghorab in 8 pac.	15 m (6-36m)		12	x							1					
Rees RW. 2002. (18)	Observational prospective	8	Patients with ischemic priapism who fail medical treatment and shunt.	91h (32-192)	N/A	6 w	2	6	x					1							
Zacharakis E. 2014. (19)	Observational retrospective	95	Patients with ischemic priapism who fail medical treatment and shunt.	Early 7d (1-17 d) vs late 5m (1-14)	Aspiration and α-adrenergic agents	2 y			68	27	0 % early vs 4 % late		7 % Early Vs 19 % Late	2 % Early vs 0 % Late	3 % Early vs 40 % Late					Implant revision 9 % early vs 27 % late.	

continue...

Durazi MH. 2008. (20)	Observational retrospective	17	Patients with ischemic priapism who fail medical treatment and shunt.	10,5m (6-18)	Medical management and shunt	3-7 days (hospitalization)	6	11		x							2	4			
Mireku-Boateng A. 1989. (21)	Case series	2	Patients with SCD and recurrent ischemic priapism	N/A	N/A	2,5 and 3 y		2		x											x
Tausch TJ. 2014. (22)	Retrospective	14	Patients with ischemic priapism who fail medical treatment and shunt.	82 h	Medical management with corpora cavernosa irrigation + phenylephrine.	N/A		14	x		1		1				1				
Upadhyay J. 1998.(23)	Case report	1	Patients with ischemic priapism who fail medical treatment and shunt.	2 y	Irrigation of corpora cavernosa and application of alpha-adrenergics.	N/A		1		x											
Bella A. 2012. (24)	Case series	5	Patients with refractory priapism taken to T-Shunt	3 m	N/A	N/A				x											x
Monga M. 1996.(25)	Case series	6	Patients with ischemic priapism who fail medical treatment and shunt.	12 y	N/A	N/A	1	5		x							1				

The studies were all retrospective. These studies included between 1 to 95 patients Zacharakis *et al.*[15] The mean time from ischemic priapism to the implant was highly heterogeneous, from 90 hours (Rees *et al.*),[18] to years after multiple episodes of recurrence (Monga *et al.*). The difference between early and late application of the prosthesis has yet to be well defined. However, Zacharakis *et al.*[19] described it as the implantation of the prostheses in less than seventeen days for early implantation vs. one month or more for late implantation.

The previously used intervention was also heterogeneous, running from corporal wash and the use of a-adrenergic agents to surgical maneuvers such as T shunt with Snake dilation; the use of a-adrenergic was the most common intervention. The follow-up period was also variable being the one reported by Durazi *et al.*[20] was the shortest, with the following being reported just during the hospitalization; the longest one was reported by Mireku-Boateng for three years;[21] the mean follow-up was one year from the implant. Most of the studies used malleable prostheses, with just four studies, Sedigh *et al.*[14] Ralph Dj *et al*,[16] Rees *et al*, and Durazi *et al.*[20] using an inflatable prosthesis.

Regarding the adverse events, Ralph *et al.*[16] reported three events of cavernosum erosion. Zacharakis *et al.*[19] had no events in the early implantation group vs. 4 % in the late implantation group, and Tausch *et al.*[22] reported one event. The implant removal was only reported by Ralph *et al.*[16] with three cases. Infection was reported in three studies: Ralph *et al.*[16] who reported three cases, Zacharakis *et al.*[19] reported 7 % in the early implantation group vs. 19 % in the late implantation group and one case reported by Tausch *et al.*[22] Other complications as deformity, size decrease, prostheses revision were reported only by Zacharakis *et al.*[19] with an incidence of 2 % in the early group, 40 % in the late group and 27 % in the late group, respectively, and complications as hematoma, urethral perforation, reduction in penile sensitivity were reported only by Sedigh *et al.*[14] in five, one and five cases, respectively.

Discussion

Although historically, some non-invasive maneuvers have been recommended for the resolution of ischemic priapism, such as masturbation, application of cold compresses, vigorous exercise, and hydration, among others, there is no scientific evidence to support the delay of invasive management with any of these measures.[22] Oral pseudoephedrine and terbutaline have not demonstrated a benefit either.[23] In addition, the use of these therapies could lead to delays in the use of more effective therapies when treating a highly time-sensitive pathology since, as several authors have shown, the time from the onset of symptoms may be reflected in the appearance of necrosis of the smooth muscle of the corpora cavernosa increasing the risk of erectile dysfunction.[24–26]

Other therapeutic options are available in cases refractory to initial management, such as lavage of the corpora cavernosa or distal shunt with or without tunneling, including penile prosthesis placement.

Within the recommendations of the societies, the placement of penile prosthesis for patients with priapism with >36h-48h of onset of symptoms is discussed, based on the high risk of erectile dysfunction in this group of patients, which reaches up to 100 % according to different case series,[24,26,27] and the effecti-

veness in terms of pain reduction,[28] achieving detumescence in these patients,[29–31] preserving the size of the corpora cavernosa and thus affecting penile length,[24,31–33] which may be reduced by the effect of fibrosis induced by the state of hypoxia inherent to the pathology. 24 In these case reports, the infection rates did not exceed 10 % of the cases.

The erectile dysfunction rate after the shunt procedure can vary from 38 to 93 %.[24,34–36] There is evidence that in patients with episodes that are successfully treated in less than 24h, around 50 % won't recover the erectile function.[2,33]

In patients without risk factors, the infection rate varies from 0-6 % of the cases,[29,30] which is higher than in virgin prostheses. However, it is lower than the rate reported of 10 %,[36,37] for patients with cavernosal fibrosis. In patients who underwent distal shunt, erosion of the corpora cavernosa and distal perforation may occur, a complication reported in about 6 % of cases; there are techniques like penoscrotal decompression that could prevent this complication.[38]

Corporal fibrosis is one of the complications at long term feared by the implant surgeon; being a complex pathology with multiple surgical approaches described, prosthesis infection and ischemic priapism are the most frequent causes of this entity, causing a shortening of the penis up to 4-6cm and according to the pathophysiology of this disease, it is suggested that early implantation of the prosthesis could help reduce the risk of this outcome.

These studies suggest that early implantation of penile prostheses in the management of refractory ischemic priapism is an exciting option, which has the possibility of reducing some of the possible long-term complications of this pathology.

Given this pathology's low frequency and nature, the studies found are primarily retrospective and non-randomized, limiting the power of the conclusions that this study can reach. There is a gap in the evidence regarding the time the prosthesis should be placed, the superiority of any prosthesis, and the waiting time after performing shunt distal to prosthesis implantation.

Conclusions

According to our findings, the early use of penile prostheses is a viable option in the ischemic priapism refractory to first-line treatment, diminishing the risk of adverse events related to late implants and giving patients a possibility of preserving sexual function and at the same time providing therapy to an unusual pathology with significant comorbidity.

Conflict of interest

None.

Funding

None.

Acknowledgments

We thank the Universidad del Valle Library Division for databases access to prepare this systematic review.

References

1. **Montague DK, Jarow J, Broderick GA, Dmochowski RR, Heaton JPW, Lue TF, et al.** American Urological Association guideline on the management of priapism. *The Journal of Urology*. 2003;170(4 Pt 1): 1318–1324. https://doi.org/10.1097/01.ju.0000087608.07371.ca.
2. **Broderick GA, Kadioglu A, Bivalacqua TJ, Ghanem H, Nehra A, Shamloul R.** Priapism: pathogenesis, epidemiology, and management. *The Journal of Sexual Medicine*. 2010;7(1 Pt 2): 476–500. https://doi.org/10.1111/j.1743-6109.2009.01625.x.
3. **Anele UA, Le BV, Resar LMS, Burnett AL.** How I treat priapism. *Blood*. 2015;125(23): 3551–3558. https://doi.org/10.1182/blood-2014-09-551887.
4. **Bivalacqua TJ, Allen BK, Brock GB, Broderick GA, Chou R, Kohler TS, et al.** The Diagnosis and Management of Recurrent Ischemic Priapism, Priapism in Sickle Cell Patients, and Non-Ischemic Priapism: An AUA/SMSNA Guideline. *The Journal of Urology*. 2022;208(1): 43–52. https://doi.org/10.1097/JU.0000000000002767.
5. **Burnett AL.** Pathophysiology of priapism: dysregulatory erection physiology thesis. *The Journal of Urology*. 2003;170(1): 26–34. https://doi.org/10.1097/01.ju.0000046303.22757.f2.
6. **Arduini GAO, Trovó de Marqui AB.** Prevalence and Characteristics of Priapism in Sickle Cell Disease. *Hemoglobin*. 2018;42(2): 73–77. https://doi.org/10.1080/03630269.2018.1452760.
7. **Bivalacqua TJ, Musicki B, Kutlu O, Burnett AL.** New insights into the pathophysiology of sickle cell disease-associated priapism. *The Journal of Sexual Medicine*. 2012;9(1): 79–87. https://doi.org/10.1111/j.1743-6109.2011.02288.x.
8. **Mantadakis E, Cavender JD, Rogers ZR, Ewalt DH, Buchanan GR.** Prevalence of priapism in children and adolescents with sickle cell anemia. *Journal of Pediatric Hematology/Oncology*. 1999;21(6): 518–522.
9. **Capece M, La Rocca R, Mirone V, Bivalacqua TJ, Castiglione F, Albersen M, et al.** A Systematic Review on Ischemic Priapism and Immediate Implantation: Do We Need More Data? *Sexual Medicine Reviews*. 2019;7(3): 530–534. https://doi.org/10.1016/j.sxmr.2018.10.007.
10. **Muneer A, Macrae B, Krishnamoorthy S, Zumla A.** Urogenital tuberculosis - epidemiology, pathogenesis and clinical features. *Nature Reviews. Urology*. 2019;16(10): 573–598. https://doi.org/10.1038/s41585-019-0228-9.
11. **Salonia A, Eardley I, Giuliano F, Hatzichristou D, Moncada I, Vardi Y, et al.** European Association of Urology guidelines on priapism. *European Urology*. 2014;65(2): 480–489. https://doi.org/10.1016/j.eururo.2013.11.008.
12. **Mishra K, Loeb A, Bukavina L, Baumgarten A, Beilan J, Mendez M, et al.** Management of Priapism: A Contemporary Review. *Sexual Medicine Reviews*. 2020;8(1): 131–139. https://doi.org/10.1016/j.sxmr.2019.01.001.
13. **Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al.** PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of Internal Medicine*. 2018;169(7): 467–473. https://doi.org/10.7326/M18-0850.
14. **Sedigh O, Rolle L, Negro CLA, Ceruti C, Timpano M, Galletto E, et al.** Early insertion of inflatable prosthesis for intractable ischemic priapism: our experience and review of the literature. *International Journal of Impotence Research*. 2011;23(4): 158–164. https://doi.org/10.1038/ijir.2011.23.

15. **Zacharakis E, De Luca F, Raheem AA, Garaffa G, Christopher N, Muneer A, et al.** Early insertion of a malleable penile prosthesis in ischaemic priapism allows later upsizing of the cylinders. *Scandinavian Journal of Urology*. 2015;49(6): 468–471. https://doi.org/10.3109/21681805.2015.1059359.
16. **Ralph DJ, Garaffa G, Muneer A, Freeman A, Rees R, Christopher AN, et al.** The immediate insertion of a penile prosthesis for acute ischaemic priapism. *European Urology*. 2009;56(6): 1033–1038. https://doi.org/10.1016/j.eururo.2008.09.044.
17. **Salem EA, El Aasser O.** Management of ischemic priapism by penile prosthesis insertion: prevention of distal erosion. *The Journal of Urology*. 2010;183(6): 2300–2303. https://doi.org/10.1016/j.juro.2010.02.014.
18. **Rees RW, Kalsi J, Minhas S, Peters J, Kell P, Ralph DJ.** The management of low-flow priapism with the immediate insertion of a penile prosthesis. *BJU international*. 2002;90(9): 893–897. https://doi.org/10.1046/j.1464-410x.2002.03058.x.
19. **Zacharakis E, Garaffa G, Raheem AA, Christopher AN, Muneer A, Ralph DJ.** Penile prosthesis insertion in patients with refractory ischaemic priapism: early vs delayed implantation. *BJU international*. 2014;114(4): 576–581. https://doi.org/10.1111/bju.12686.
20. **Durazi MH, Jalal AA.** Penile prosthesis implantation for treatment of postpriapism erectile dysfunction. *Urology Journal*. 2008;5(2): 115–119.
21. **Mireku-Boateng A, Jackson AG.** Penile prosthesis in the management of priapism. *Urologia Internationalis*. 1989;44(4): 247–248. https://doi.org/10.1159/000281515.
22. **Tausch TJ, Zhao LC, Morey AF, Siegel JA, Belsante MJ, Seideman CA, et al.** Malleable penile prosthesis is a cost-effective treatment for refractory ischemic priapism. *The Journal of Sexual Medicine*. 2015;12(3): 824–826. https://doi.org/10.1111/jsm.12803.
23. **Upadhyay J, Shekarriz B, Dhabuwala CB.** Penile implant for intractable priapism associated with sickle cell disease. *Urology*. 1998;51(4): 638–639. https://doi.org/10.1016/s0090-4295(97)00704-8.
24. **Bella A, Wang R, Shamloul R, Zappavigna C, Ahmed M, Sadeghi-Nejad H.** 1859 3-piece inflatable penile prosthesis insertion post T-shunt for priapism with dilation/corporal snake maneuver and comparison to post al-ghorab shunt ipp outcomes. *The Journal of Urology*. 2012; https://doi.org/10.1016/j.juro.2012.02.1971.
25. **Monga M, Broderick GA, Hellstrom WJ.** Priapism in sickle cell disease: the case for early implantation of the penile prosthesis. *European Urology*. 1996;30(1): 54–59. https://doi.org/10.1159/000474145.
26. **Olujohungbe A, Burnett AL.** How I manage priapism due to sickle cell disease. *British Journal of Haematology*. 2013;160(6): 754–765. https://doi.org/10.1111/bjh.12199.
27. **Govier FE, Jonsson E, Kramer-Levien D.** Oral terbutaline for the treatment of priapism. *The Journal of Urology*. 1994;151(4): 878–879. https://doi.org/10.1016/s0022-5347(17)35111-x.
28. **Zacharakis E, Raheem AA, Freeman A, Skolarikos A, Garaffa G, Christopher AN, et al.** The efficacy of the T-shunt procedure and intracavernous tunneling (snake maneuver) for refractory ischemic priapism. *The Journal of Urology*. 2014;191(1): 164–168. https://doi.org/10.1016/j.juro.2013.07.034.
29. **Ortaç M, Çevik G, Akdere H, Ermeç B, Kadıoğlu A.** Anatomic and Functional Outcome Following

Distal Shunt and Tunneling for Treatment İschemic Priapism: A Single-Center Experience. *The Journal of Sexual Medicine*. 2019;16(8): 1290–1296. https://doi.org/10.1016/j.jsxm.2019.05.011.

30. **Bennett N, Mulhall J.** Sickle cell disease status and outcomes of African-American men presenting with priapism. *The Journal of Sexual Medicine*. 2008;5(5): 1244–1250. https://doi.org/10.1111/j.1743-6109.2008.00770.x.
31. **Kulmala RV, Lehtonen TA, Lindholm TS, Tammela TL.** Permanent open shunt as a reason for impotence or reduced potency after surgical treatment of priapism in 26 patients. *International Journal of Impotence Research*. 1995;7(3): 175–180.
32. **Fuchs JS, Shakir N, McKibben MJ, Mathur S, Teeple S, Scott JM, et al.** Penoscrotal Decompression-Promising New Treatment Paradigm for Refractory Ischemic Priapism. *The Journal of Sexual Medicine*. 2018;15(5): 797–802. https://doi.org/10.1016/j.jsxm.2018.02.010.
33. **Winter CC.** Priapism cured by creation of fistulas between glans penis and corpora cavernosa. *The Journal of Urology*. 1978;119(2): 227–228. https://doi.org/10.1016/s0022-5347(17)57440-6.
34. **Segal RL, Readal N, Pierorazio PM, Burnett AL, Bivalacqua TJ.** Corporal Burnett 'Snake' surgical maneuver for the treatment of ischemic priapism: long-term followup. *The Journal of Urology*. 2013;189(3): 1025–1029. https://doi.org/10.1016/j.juro.2012.08.245.
35. **Wilson SK, Zumbe J, Henry GD, Salem EA, Delk JR, Cleves MA.** Infection reduction using antibiotic-coated inflatable penile prosthesis. *Urology*. 2007;70(2): 337–340. https://doi.org/10.1016/j.urology.2007.03.058.
36. **Wilson SK.** Reimplantation of inflatable penile prosthesis into scarred corporeal bodies. *International Journal of Impotence Research*. 2003;15 Suppl 5: S125-128. https://doi.org/10.1038/sj.ijir.3901086.
37. **Bozkurt İH, Yonguç T, Aydoğdu Ö, Değirmenci T, Arslan M, Minareci S.** Use of a microdebrider for corporeal excavation and penile prosthesis implantation in men with severely fibrosed corpora cavernosa: a new minimal invasive surgical technique. *Turkish Journal of Urology*. 2015;41(3): 119–124. https://doi.org/10.5152/tud.2015.36539.
38. **Tsambarlis PN, Chaus F, Levine LA.** Successful Placement of Penile Prostheses in Men With Severe Corporal Fibrosis Following Vacuum Therapy Protocol. *The Journal of Sexual Medicine*. 2017;14(1): 44–46. https://doi.org/10.1016/j.jsxm.2016.11.304.