

C. Anterior Üretra Darlıklarında Üretroplasti

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GİRİŞ

Erkek üretrasi, mesane boynu ile glans penis tepeindeki ostium uretra eksternum arasında uzanır. Yaklaşık 20 cm uzunluğunda olan uretra, anterior ve posterior olmak üzere iki ana kısımdan oluşur. Posterior uretra, prostatik ve membranöz olarak; anterior uretra ise bulbar, penil ve meatal uretra olmak üzere sınıflandırılır. Dünya genelinde erkek üretral darlığının (ÜD) insidansın 229-627/100.000 erkek olduğu tahmin edilmektedir. En sık etkilenen anterior üretradır (%92,2), özellikle bulbar uretra (%46,9). Üretral darlıklar, genel nüfusa kıyasla daha yaşlı bireylerde ve siyah hastalarda daha yaygındır. 55 yaşından itibaren insidansında belirgin bir artış gözlemlenmektedir. Üretral darlıklarına yaklaşımda anterior veya posterior uretrada oluşu, sfinkter ile olan ilişkisi gibi darlığını anatomik konumu esas alınır.

Anterior uretra darlığında birinci basamak tedavi direkt vizüel internal üretrotomi (DVIÜ) değerlendirmekle birlikte yaklaşık %80 oranında görülen nüksler önemli bir sorun olarak karşımıza çıkar. Mevcut kılavuzlarda, uzun (>2 cm), multiple ve yaygın periüretal fibrozisi olan hastalar için kesin tedavi şansı çok sınırlı olması nedeniyle tekrar-

layan DVIÜ önerilmemektedir. İlk insizyon sonrası 3 ay içinde tekrarlayan darlıklar için de DVIÜ önerilmemektedir. Bu hasta grubunda yaklaşık %95 başarı oranı ile anastomotik veya doku flap/greftleri kullanılarak üretroplasti uygulanmalıdır. Aşağıdaki **tablo 1**'de anterior üretroplasti yöntemleri listelenmiştir.

Bu bölümde, anterior uretra darlık vakalarıyla karşılaşlıklarında günlük pratiklerinde yardımcı olacak ve daha güvenli karar almalarını kolaylaştıracak üretroplasti konuları ele alınacaktır.

DİSTAL ÜRETRAL DARLIKLER

Eksternal Üretral Mea ve Fossa Navicularis Darlığı

Fossa navicularis (FN) ve eksternal mea darlıkları (EMD) yetişkin erkeklerde yaygın olarak görülmekte olup distal üretral darlıklar olarak da adlandırılır. Tüm üretral darlıkların yaklaşık %18'ini oluşturduğu bildirilmiştir. Distal üretral darıkların nedenleri, kronik üretral enfeksiyonların yanı sıra idiopatik nedenler, travma, üretral enstrü-

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KAYNAKLAR

1. Chapple C, Mangir N. Recent Advances in treatment of urethral stricture disease in men. F1000Res [Internet]. 2020 [cited 2025 Jan 28];9. Available from: <https://pubmed.ncbi.nlm.nih.gov/32419925/>
2. Wessells H, Morey A, Souter L, Rahimi L, Vanni A. Urethral Stricture Disease Guideline Amendment (2023). J Urol [Internet]. 2023 Jul 1 [cited 2025 Jan 28];210(1):64–71. Available from: <https://pubmed.ncbi.nlm.nih.gov/37096574/>
3. Epidemiology of urethral strictures - Alwaal - Translational Andrology and Urology [Internet]. [cited 2025 Jan 29]. Available from: <https://tau.amegroups.org/article/view/3755/4681>
4. Palminteri E, Berdondin E, Verze P, De Nunzio C, Vitarelli A, Carmignani L. Contemporary urethral stricture characteristics in the developed world. Urology [Internet]. 2013 [cited 2025 Jan 29];81(1):191–7. Available from: <https://pubmed.ncbi.nlm.nih.gov/23153951/>
5. Kulkarni S, Joshi PM, Bhadravar S. Advances in urethroplasty. Med J Armed Forces India [Internet]. 2022 Jan 1 [cited 2025 Jan 28];79(1):6. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC9807740/>
6. Abbasi B, Shaw NM, Lui JL, Li KD, Low P, Hakam N, et al. Comparative review of the guidelines for anterior urethral stricture. World J Urol [Internet]. 2022 Aug 1 [cited 2025 Jan 28];40(8):1971–80. Available from: <https://pubmed.ncbi.nlm.nih.gov/35316387/>
7. Daneshvar M, Hughes M, Nikolavsky D. Surgical Management of Fossa Navicularis and Distal Urethral Strictures. Curr Urol Rep [Internet]. 2018 Jun 1 [cited 2025 Feb 17];19(6). Available from: <https://pubmed.ncbi.nlm.nih.gov/29667080/>
8. Babu P, Nayak A, Javali TD, Joshi P, Nagaraj K, Aggarwal K. Evaluation of Jordan's meatoplasty for the treatment of fossa navicularis strictures. A retrospective study. Central European Journal of Urology Cent European J Urol. 2017;70:103–6.
9. Meeks JJ, Barbagli G, Mehdiratta N, Granieri MA, Gonzalez CM. Distal urethroplasty for isolated fossa navicularis and meatal strictures. BJU Int [Internet]. 2012 Feb [cited 2025 Feb 17];109(4):616–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/21615852/>
10. Barbagli G, Morgia G, Lazzeri M. Retrospective outcome analysis of one-stage penile urethroplasty using a flap or graft in a homogeneous series of patients. BJU Int [Internet]. 2008 Oct [cited 2025 Feb 17];102(7):853–60. Available from: <https://pubmed.ncbi.nlm.nih.gov/18485036/>
11. Fu Q, Zhang Y, Zhang J, Xie H, Sa YL, Jin S. Substitution urethroplasty for anterior urethral stricture repair: comparison between lingual mucosa graft and pedicled skin flap. Scand J Urol [Internet]. 2017 Nov 2 [cited 2025 Feb 17];51(6):479–83. Available from: <https://pubmed.ncbi.nlm.nih.gov/28738760/>
12. Wang JW, Man LB, Huang GL, He F, Wang H, Wang HD, et al. Single-stage repair of penile urethral stricture using combined dorsal onlay oral mucosa grafting with ventral onlay penile skin flap. Beijing da xue xue bao Yi xue ban = Journal of Peking University Health sciences. 2019 Aug 18;51(4):641–5.
13. Treiyer A, Anheuser P, Reisch B, Steffens J. Tratamiento de la estrechez del meato uretral por balanitis xerótica obliterante: resultados a largo plazo empleando meatoplastia de Malone. Actas Urol Esp. 2011 Sep 1;35(8):494–8.
14. Treiyer A, Anheuser P, Reisch B, Steffens J. Tratamiento de la estrechez del meato uretral por balanitis xerótica obliterante: resultados a largo plazo empleando meatoplastia de Malone. Actas Urol Esp. 2011 Sep 1;35(8):494–8.
15. Lumen N, Campos-Juanatey F, Greenwell T, Martins FE, Osman NI, Riechardt S, et al. European Association of Urology Guidelines on Urethral Stricture Disease (Part 1): Management of Male Urethral Stricture Disease. Eur Urol [Internet]. 2021 Aug 1 [cited 2025 Jan 29];80(2):190–200. Available from: <https://pubmed.ncbi.nlm.nih.gov/34059397/>
16. Zumstein V, Dahlem R, Maurer V, Marks P, Kluth LA, Rosenbaum CM, et al. Single-stage buccal mucosal graft urethroplasty for meatal stenoses and fossa navicularis strictures: a monocentric outcome analysis and literature review on alternative treatment options. World J Urol [Internet]. 2020 Oct 1 [cited 2025 Feb 17];38(10):2609–20. Available from: <https://pubmed.ncbi.nlm.nih.gov/31786639/>
17. Bastian PJ, Mayer M, Tritschler S, Roosen A, Nuhn P, Bauer RM, et al. Single-stage dorsal inlay for reconstruction of recurrent peno-glandular stenosis. World J Urol [Internet]. 2012 Nov [cited 2025 Feb 17];30(5):715–21. Available from: <https://pubmed.ncbi.nlm.nih.gov/21989815/>
18. Campos-Juanatey F, Bugeja S, Dragova M, Frost A, Ivaz S, Andrich D, et al. Single-stage tubular urethral reconstruction using oral grafts is an alternative to classical staged approach for selected penile urethral strictures. Asian J Androl [Internet]. 2020 Mar 1 [cited 2025 Feb 17];22(2):134–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/31441450/>
19. Asopa HS, Garg M, Singhal GG, Singh L, Asopa J, Nischal A. Dorsal free graft urethroplasty for urethral stricture by ventral sagittal urethrotomy approach. Urology [Internet]. 2001 [cited 2025 Feb 17];58(5):657–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/11711331/>
20. Nikolavsky D, Abouelleil M, Daneshvar M. Transurethral ventral buccal mucosa graft inlay urethroplasty for reconstruction of fossa navicularis and distal urethral strictures: surgical technique and preliminary results. Int Urol Nephrol [Internet]. 2016 Nov 1 [cited 2025 Feb 17];48(11):1823–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/27470030/>
21. Brannan W, Ochsner MG, Fuselier HA, Goodlet JS. Free full thickness skin graft urethroplasty for urethral stricture: experience with 66 patients. J Urol [Internet]. 1976 [cited 2025 Feb 17];115(6):677–80. Available from: <https://pubmed.ncbi.nlm.nih.gov/781311/>
22. Virasoro R, Eltahawy EA, Jordan GH. Long-term follow-up for reconstruction of strictures of the fossa navicularis with a single technique. BJU Int [Internet]. 2007 Nov [cited 2025 Feb 17];100(5):1143–5. Available from: <https://pubmed.ncbi.nlm.nih.gov/17627782/>
23. Armenakas NA, McAninch JW. Management of fossa navicularis strictures. Urologic Clinics of North America. 2002 May;29(2):477–84.

24. Önal SY, Önal FF, Onur S, Inal H, Akbaş A, Köse O. Reconstruction of strictures of the fossa navicularis and meatus with transverse island fasciocutaneous penile flap. *J Urol* [Internet]. 2008 Apr [cited 2025 Feb 17];179(4):1437–40. Available from: <https://pubmed.ncbi.nlm.nih.gov/18295281/>
25. Hofer MD, Cooley LF, Martins FE. Narrative review of penile distal urethroplasties and suggestions for optimizing outcomes. *Transl Androl Urol* [Internet]. 2021 Jun 1 [cited 2025 Feb 17];10(6):2609–16. Available from: <https://pubmed.ncbi.nlm.nih.gov/34295747/>
26. Mori RL, Angermeier KW. Staged urethroplasty in the management of complex anterior urethral stricture disease. *Transl Androl Urol* [Internet]. 2015 [cited 2025 Feb 17];4(1):294–234. Available from: <https://tau.amegroups.org/article/view/5678/html>
27. Singh SK, Agrawal SK, Mavuduru RS. Management of the stricture of fossa navicularis and pendulous urethral strictures. *Indian J Urol* [Internet]. 2011 Jul [cited 2025 Feb 17];27(3):371–7. Available from: <https://pubmed.ncbi.nlm.nih.gov/22022062/>
28. Salako AA, Olajide AO, Aremu AA, Afolayan MO, Adejare IE, Oseni OG. Pendulous urethral stricture: Peculiarities and relevance of longitudinal penile fascio-cutaneous flap reconstruction in poor resource community. *Urol J*. 2013;10(4):1088–94.
29. Mangera A, Patterson JM, Chapple CR. A Systematic Review of Graft Augmentation Urethroplasty Techniques for the Treatment of Anterior Urethral Strictures. *Eur Urol*. 2011 May 1;59(5):797–814.
30. Aldaqadossi H, El Gamal S, El-Nadey M, El Gamal O, Radwan M, Gaber M. Dorsal onlay (Barbagli technique) versus dorsal inlay (Asopa technique) buccal mucosal graft urethroplasty for anterior urethral stricture: a prospective randomized study. *Int J Urol* [Internet]. 2014 Feb 1 [cited 2025 Feb 17];21(2):185–8. Available from: <https://pubmed.ncbi.nlm.nih.gov/23931150/>
31. Kulkarni S, Barbagli G, Kirpekar D, Mirri F, Lazzeri M. Lichen sclerosus of the male genitalia and urethra: surgical options and results in a multicenter international experience with 215 patients. *Eur Urol* [Internet]. 2009 Apr [cited 2025 Feb 17];55(4):945–56. Available from: <https://pubmed.ncbi.nlm.nih.gov/18691809/>
32. Barbagli G, Barbagli G, Palminteri E, Guassoni H, Darenkov S. Methods of dorsal graft urethroplasty. *Urologia* [Internet]. 2003 Oct 15 [cited 2025 Feb 17];0(5):16–20. Available from: <https://journals.eco-vector.com/1728-2985/article/view/275027>
33. Jinga V, Hurduc M, Voinescu V, Filipoiu F, Balgradeanu M. Ventral Buccal Mucosa Graft Urethroplasty for Penile Urethral Strictures: A Predictable Failure?
34. Mellon MJ, Bihrlie R. Ventral onlay buccal mucosa urethroplasty: a 10-year experience. *Int J Urol* [Internet]. 2014 Feb 1 [cited 2025 Feb 17];21(2):190–3. Available from: <https://pubmed.ncbi.nlm.nih.gov/23980634/>
35. Bakbagli G, Palminteri E, Guazzoni G, Montorsi F, Turini D, Lazzeri M. Bulbar urethroplasty using buccal mucosa grafts placed on the ventral, dorsal or lateral surface of the urethra: are results affected by the surgical technique? *J Urol* [Internet]. 2005 [cited 2025 Feb 17];174(3):955–8. Available from: <https://pubmed.ncbi.nlm.nih.gov/16094007/>
36. Heinke T, Gerharz EW, Bonfig R, Riedmiller H. Ventral onlay urethroplasty using buccal mucosa for complex stricture repair. *Urology*. 2003 May 1;61(5):1004–7.
37. Chapple C, Andrich D, Atala A, Barbagli G, Cavalcanti A, Kulkarni S, et al. SIU/ICUD Consultation on Urethral Strictures: The management of anterior urethral stricture disease using substitution urethroplasty. *Urology* [Internet]. 2014 [cited 2025 Feb 17];83(3 Suppl). Available from: <https://pubmed.ncbi.nlm.nih.gov/24411214/>
38. Hoy NY, Chapman DW, Rourke KF. Better defining the optimal management of penile urethral strictures: A retrospective comparison of single-stage vs. two-stage urethroplasty. *Can Urol Assoc J* [Internet]. 2019 [cited 2025 Feb 17];13(12):414–8. Available from: <https://pubmed.ncbi.nlm.nih.gov/31039110/>
39. Soliman MG, Abo Farha M, El Abd AS, Abdel Hameed H, El Gamal S. Dorsal onlay urethroplasty using buccal mucosa graft versus penile skin flap for management of long anterior urethral strictures: a prospective randomized study. *Scand J Urol* [Internet]. 2014 Oct 1 [cited 2025 Feb 17];48(5):466–73. Available from: <https://pubmed.ncbi.nlm.nih.gov/24579804/>
40. Dubey D, Vijan V, Kapoor R, Srivastava A, Mandhani A, Kumar A, et al. Dorsal Onlay Buccal Mucosa Versus Penile Skin Flap Urethroplasty for Anterior Urethral Strictures: Results From a Randomized Prospective Trial. *Journal of Urology*. 2007 Dec;178(6):2466–9.
41. Andrich DE, Greenwell TJ, Mundy AR. The problems of penile urethroplasty with particular reference to 2-stage reconstructions. *J Urol* [Internet]. 2003 Jul 1 [cited 2025 Feb 17];170(1):87–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/12796651/>
42. ALBERCA-DEL ARCO F, SANTOS-PÉREZ DE LA BLANCA R, AMORES VERGARA C, HERREIRA-IMBRODA B, SÁEZ-BARRANQUERO F. Bulbar urethroplasty techniques and stricture recurrence: differences between end-to-end urethroplasty versus the use of graft. *Minerva urology and nephrology* [Internet]. 2024 Jul 24 [cited 2025 Feb 19];76(5). Available from: <https://pubmed.ncbi.nlm.nih.gov/39045660/>
43. Virasoro R, DeLong JM. Non-transecting bulbar urethroplasty is favored over transecting techniques. *World J Urol* [Internet]. 2020 Dec 1 [cited 2025 Feb 19];38(12):3013–8. Available from: <https://pubmed.ncbi.nlm.nih.gov/31280330/>
44. Morey AF, Watkin N, Shenfeld O, Eltahawy E, Giudice C. SIU/ICUD Consultation on Urethral Strictures: Anterior urethra--primary anastomosis. *Urology* [Internet]. 2014 [cited 2025 Feb 19];83(3 Suppl). Available from: <https://pubmed.ncbi.nlm.nih.gov/24373726/>
45. Chapman DW, Cotter K, Johnsen N V, Patel S, Kinnaird A, Erickson BA, et al. Nontransecting Techniques Reduce Sexual Dysfunction after Anastomotic Bulbar Urethroplasty: Results of a Multi-Institutional Comparative Analysis. *J Urol* [Internet]. 2019 Feb 1 [cited 2025 Feb 19];201(2):364–70. Available from: <https://pubmed.ncbi.nlm.nih.gov/30266331/>
46. Andrich DE, Mundy AR. Non-transecting anastomotic bulbar urethroplasty: a preliminary report. *BJU Int* [Internet]. 2012 Apr 1 [cited 2025 Feb 19];109(7):1090–4.

Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1464-410X.2011.10508.x>

47. Bakbagli G, Palminteri E, Guazzoni G, Montorsi F, Turrini D, Lazzeri M. Bulbar urethroplasty using buccal mucosa grafts placed on the ventral, dorsal or lateral surface of the urethra: are results affected by the surgical technique? *J Urol [Internet]*. 2005 [cited 2025 Feb 19];174(3):955–8. Available from: <https://pubmed.ncbi.nlm.nih.gov/16094007/>
48. Fichtner J, Filipas D, Fisch M, Hohenfellner R, Thüroff JW. Long-term outcome of ventral buccal mucosa onlay graft urethroplasty for urethral stricture repair. *Urology [Internet]*. 2004 Oct [cited 2025 Feb 19];64(4):648–50. Available from: <https://pubmed.ncbi.nlm.nih.gov/15491691/>
49. Abouassaly R, Angermeier KW. Augmented anastomotic urethroplasty. *J Urol [Internet]*. 2007 Jun [cited 2025 Feb 19];177(6):2211–6. Available from: <https://pubmed.ncbi.nlm.nih.gov/17509322/>
50. Bugeja S, Andrich DE, Mundy AR. Non-transecting bulbar urethroplasty. *Transl Androl Urol [Internet]*. 2015 [cited 2025 Feb 19];4(1):41–50. Available from: <https://pubmed.ncbi.nlm.nih.gov/26816808/>