

Berdondini E.¹, Margara A.¹, Silvani M.¹, Bardari F.², Pastore A.³, Maruccia S.⁴, Zucchi A.⁵, Reale G.⁶, Liaci A.⁷, Stubinski R.⁸, Cerruto M.⁹, Gacci M.⁷, Voce S.⁶

¹Center for Regenerative Urogenital Surgery, Dept. of Reconstructive Urethral and Genital Surgery, Turin, Italy, ²San Giovanni Bosco Hospital, Dept. of Urology, Turin, Italy, ³Università La Sapienza, Dept. of Urology, Rome, Italy, ⁴Istituti Clinici Zucchi, Dept. of Urology, Monza, Italy, ⁵Università degli studi di Pisa, Dept. of Urology, Pisa, Italy, ⁶Ospedale Santa Maria delle Croci, Dept. of Urology, Ravenna, Italy, ⁷Università degli studi di Firenze, Dept. of Urology, Florence, Italy, ⁸Ospedale San Carlo Milan, Dept. of Urology, Milan, Italy, ⁹Università degli studi di Verona, Dept. of Urology, Verona, Italy

Introduction & Objectives: The surgical treatment of urethral strictures varies according to cause, location, and length of stricture. Treatment of short strictures is relatively well defined. However, management of long-segment urethral stricture, or panurethral stricture disease or failed hypospadias repair is challenging. The buccal mucosa represent the gold standard for penile and bulbar urethroplasty, but there is a limit of harvest. Autologous nanofat grafting (ANG) rich in adipose-derived stem cells (ADSCs) is a well defined and widespread procedure in plastic surgery. It has been proposed for the treatment of a lot of pathologies characterized by scars and chronic inflammation. We report our preliminary results with ANG in the treatment of anterior and non-obstructive urethral stricture.

Materials & Methods: From 2020 to 2021, 12 male patients with non-obstructive anterior urethral stricture underwent ANG urethroplasty. The cause of stricture was unknown in 5, failed hypospadias repair in 2, lichen sclerosus in 2, iatrogenic 3. All patients underwent prior treatments such as dilations, urethrotomies, urethroplasties. Surgical procedure: the harvest of adipose tissue was performed with lipoaspiration under low pressure, emulsification and filtration, to obtain the nanofat for injection. After a ventral urethrotomy the nanofat (average quantity 80 cc) was introduced into the scarred urethral plate by means of injection with a needle of 23-25 Gauge. After tissue releasing and obtaining an adequate urethral plate the spongioplasty was made over a catheter.

Results: Median age 51 (27 to 70). Mean stricture length was 2,5 cm (1,5 to 4 cm). Mean preoperative peak flow was 9,4 ml/sec, while mean postoperative 18,5 ml/sec. The location was 2 penile, 5 peno-bulbar and 5 bulbar stricture. Mean operative time was 60 min (50 to 80min). After urethroplasty, a 14 or 16 Ch Foley catheter was left in place for 4 weeks and after voiding urethrocytography no patient develop a fistula. No peri- or postoperative complications occurred. Mean follow-up was 15 months (range 7 to 26 months). All patients were followed by uroflowmetry at 3,6,9,12 mo for the first year and every 6 months after. One patient reported a decrease of urinary flow after 18 mo, but urethroscopy showed an adequate urethral lumen.

Conclusions: The ANG represents a new treatment for urethral stricture, opening the opportunity to regenerate tissues instead of substituting them with other autologous grafts. The adipose tissue represents a big depot and it is available in large quantities. It is mandatory to follow the right steps to prepare ANG and adapt the fat grafting to the clinical case. Long-term follow-up with larger series of pts is mandatory in order to better evaluate the results of ANG urethroplasty.