

Interview

Interview with Dr Guido Barbagli Substitution Urethroplasty: Which Tissues and Techniques are Optimal for Urethral Replacement?

Christine McKillop*



Dr Guido Barbagli was born in Pieve Santo Stefano near Arezzo, Italy in 1950. In 1978, he graduated from the University of Florence as a Doctor of Medicine and Surgery and in 1982, he did his residency in urology. From 1979 to 1999, Dr Barbagli worked at the Department of Urology at the University of Florence and he is currently Head of the Centre for Urethral and Genitalia Reconstructive Surgery in Arezzo. To date, Guido Barbagli has published four books and more than 20 articles on reconstructive urethral surgery, which have been published in international scientific journals. His work has popularized dorsal onlay graft urethroplasty, a technique that is now used worldwide in the repair of urethral strictures.

The original procedure for urethroplasty involved the use of scrotal skin, but the long-term efficacy

was unacceptable. Subsequently, nonhirsute, full-thickness skin graft tissue was used. Can you expand on the outcome with the use of these tissues, highlighting the associated limitations?

For many years, penile skin was the most popular substitute material used for urethroplasty, but today buccal mucosa is suggested as the best transplant tissue for urethral reconstruction. Is buccal mucosa really superior to penile skin? Recently, Alsikafi et al [1] compared the results of 95 buccal mucosa and 24 penile skin graft urethroplasties. The overall success rate of skin urethroplasty was 84% (mean follow-up: 201 mo), whereas the success rate of buccal mucosa urethroplasty was 87% (mean follow-up: 48 mo), with no statistically significant difference between the two groups. Gozzi et al [2] conducted a retrospective evaluation of 194 patients with anterior (70.6%) and posterior (29.4%) urethral strictures who were treated by genital and extra-genital skin graft urethroplasty. Outcome at a mean of 31 mo was excellent in 98% of cases. We retrospectively reviewed the results of 95 patients who underwent bulbar urethral reconstruction using skin (45 patients) or buccal mucosa grafts (50 patients) [3,4]. Successful outcome was reported in 33 (75%) skin grafts [3] and 42 (84%) buccal mucosa urethroplasties [4]; however, follow-up was longer in the skin graft group (mean: 71 mo) compared with the buccal mucosa graft (mean: 42 mo). In adult patients with complications following multiple failed hypospadias repairs, the use of buccal mucosa as substitute material provided an

*E-mail address: christinemckillop@medscimedia.co.uk.

81% success rate in one-stage procedures and 82.3% in multistage procedures [5]. However, the use of skin as substitute material in this difficult population of patients provided an 80% success in one-stage procedures and 50% in multistage procedures [5]. In addition, in patients suffering from genital lichen sclerosus, the use of buccal mucosa is mandatory because any skin that would be used as graft material already is or may become diseased [6,7]. In summary, skin and buccal mucosa are both excellent materials for urethroplasty with comparable success rates.

The most recent development with urethral replacement involves the use of buccal mucosa. Can you highlight the advantages and disadvantages of using this tissue source?

Buccal mucosa is readily available from all patients and is easily harvested from the inner cheek or lower lip, providing the advantage of a concealed donor site scar [8]. Moreover, buccal mucosa is hairless, has a thick elastin-rich epithelium, which makes it tough yet easy to handle, and has a thin and highly vascular lamina propria, which facilitates inosculation and imbibition [8]. In patients requiring penile urethroplasty, the use of buccal mucosa graft prevents cosmetic disadvantages (penile-glans torsion, subcutaneous deformity, chordee) caused by the use of local genital skin. Recently, the theoretical advantages of the buccal mucosa graft used as an onlay patch rather than a complete tube were demonstrated pathologically [9]. The great elasticity and handiness of buccal mucosa have led to the introduction of a new kind of urethroplasty [10]. However, when used in a staged procedure, the buccal mucosa graft does not heal in the same way in all patients, and numerous revisions of the graft bed may be necessary to obtain a satisfactory mucosal bed before urethral closure [5]. Unfortunately, these repeated surgical revisions could have a tremendous psychological impact on the patient.

In your opinion, what is the most successful type of urethroplasty conducted today, and can this procedure be applied to all patient types or are there limitations?

Surgical treatment of urethral stricture diseases is a continually evolving process, and the superiority of one technique over another has yet to be clearly demonstrated. The reconstructive urethral surgeon must be familiar with the use of various surgical techniques so that he can deal with any condition of the urethra during surgery. Urethrotomy continues

to be the most commonly used technique, but repeated dilation or urethrotomy exacerbates scar formation, thus adding to stricture length and predisposing to a more difficult definitive open repair and a lower success rate [11]. Recently, some authors [11] have suggested that the persistent use of dilation or urethrotomy for the treatment of urethral strictures may be the result of unfamiliarity with the literature and inexperience with urethroplasty surgery. Moreover, most urologists erroneously believe that the use of open reconstructive urethral procedures are justified only in young, healthy patients because these treatments are associated with a high rate of complications, thus requiring longer patient hospitalization and higher hospital costs. Internal urethrotomy is a less-invasive outpatient procedure, so it has the obvious benefits of surgeon/patient convenience and cost control.

Buccal mucosa has become the most popular substitute material in urethroplasty; however, the results with skin grafts have longer follow-up. Recently, in the penile urethra, the use of free grafts has been making a comeback, with fewer surgeons using genital flaps. In the bulbar urethra, short traumatic strictures are amenable to repair by primary anastomosis, with a higher success rate. Longer strictures are repaired using ventral or dorsal graft urethroplasty with the same success rate. New tools such as fibrin glue or engineered material will become a standard in future treatment. Could it be that the use of this classic type of urethroplasty has reached its limit? The time has arrived to develop other forms of substitution material, incorporating tissue-engineered materials or stem cells into our quest for the Holy Grail of urethral substitution.

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