



Video bank

The radical soft-tissue mobilization (Kelly repair) for bladder exstrophy



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Summary

The radical soft-tissue mobilization (RSTM) technique has been proposed as an alternative for staged reconstruction of bladder exstrophy. In this video, we demonstrate the successive steps of this technique.

Methods

A newborn male with classic bladder exstrophy underwent bladder closure without pelvic osteotomies at birth; he then underwent RSTM at 1 year of age.

Technique

Mobilization: The RSTM involved simultaneous intra-pelvic and perineal dissection, aiming at full mobilization of potential urethral sphincter striated structures, levatores ani muscles, pudendal pedicles and corpora cavernosa from their attachment on the pubic bones. From the perineal approach, a periosteum incision was performed on the antero-medial aspect of the pubic bones, and the periosteum was peeled from the ischio-pubic ramus, lifting the corpora from the bone and providing control on the pudendal pedicles. The attachments of all striated muscular structures on the lower aspects of the posterior corpora (transverse perinei, bulbospongiosus, ischio-cavernosus muscles) were released to allow adequate re-approximation around the reconstructed urethra.

Reconstruction: After ureteric reimplantation, a funnel-shaped cervicoplasty was performed and continued by urethroplasty over an 8-Fr catheter. The muscular structures mobilized from the corpora and the bones were wrapped around the neo-urethra, which was transposed ventrally in the scrotal position, creating a temporary hypospadiac urethrostomy. After abdominal wall closure, the corpora were then de-rotated, and secured to the neo-symphysis with non-absorbable sutures, and the penile skin shaft was reconstructed.

Results

At the 12-month follow-up, the boy was asymptomatic, still in nappies, with non-dilated upper-tracts on renal ultrasound, and dryness intervals of 90 min.

Conclusion

Radical soft-tissue mobilization allows a tension-free bladder-neck reconstruction, and may favour development of physiological continence mechanisms independent of the inevitable pubic symphysis re-enlargement. Creation of temporary hypospadias is most often needed to maximize penile length. This technically demanding procedure requires thorough knowledge of detailed anatomy of the bladder exstrophy pelvis, as demonstrated in this video.

J.H. Kelly first described the radical soft-tissue mobilization (RSTM) technique in Melbourne, Australia in 1995 [1]. It has since been proposed as an alternative for staged reconstruction of bladder exstrophy and incontinent epispadias. In this video, we demonstrate the successive steps of this technique.

performed at 11 months showed a bladder capacity of 40 ml, with bilateral VUR. He was scheduled for reconstruction at 12 months of age.

Surgical technique

Mobilization

The RSTM started with a lower abdominal midline incision extending around the epispadiac orifice and urethral plate, with complete degloving of the penis. It involved simultaneous intra-pelvic and perineal dissection, aiming at full mobilization of potential urethral sphincter striated structures, levatores ani muscles, pudendal pedicles and

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.jpuiol.2015.08.007>.

Methods

A newborn male with classic bladder exstrophy underwent bladder closure without pelvic osteotomies at day 1 of birth. Assessment

corpora cavernosa from their attachment on the pubic bones. On the medial walls of the pelvis, the levator ani muscles were detached from the internal obturator fascia, exposing the fat of the ischio-rectal fossa, and allowing access to the pudendal pedicles from above in the Alcock's canal. From the perineal approach, a periosteum incision was performed on the antero-medial aspect of the pubic bones, extending posteriorly toward the ischium. The periosteum was then peeled from the ischio-pubic ramus, lifting the corpora from the bone and providing control on the pudendal pedicles from below. The urethral plate and the corpora were separated. The attachments of all striated muscular structures on the lower aspects of the posterior corpora (transverse perinei, bulbo-spongiosus, ischio-cavernosus muscles) were released to allow adequate re-approximation around the reconstructed urethra.

Reconstruction

After midline anterior opening of the bladder, the ureteric orifices were reimplanted cranially on the midline. A funnel-shaped cervicoplasty was performed after resection of the mucosal triangles, continued by urethroplasty and sutured in two layers over an 8-Fr catheter. The neo-urethra was transposed ventrally in the scrotal position, creating a temporary hypospadiac urethrostomy. The muscular structures that were mobilized from the corpora were wrapped around the neo-urethra using 4/0 absorbable sutures. The corpora were then de-rotated to correct the chordee, sutured together with non-absorbable sutures, and secured to the neo-symphysis at a later stage once the abdominal wall was closed.

The bladder was closed over a 14-Fr cystostomy tube. The rectus abdomini muscles were sutured together, before both pubic bones were re-approximated using three mattress sutures, with large 0 absorbable monofilament. The penile skin was re-orientated to allow reconstruction of penile skin shaft.

Results

The postoperative course was uneventful. At the 12-month follow-up, the boy was asymptomatic, still in nappies, with

non-dilated upper tracts on renal ultrasound, and dryness intervals of 90 min.

Conclusion

Radical soft-tissue mobilization is based on the assumption that some functional muscular structures with potential for sphincteric function do exist in bladder exstrophy patients [2,3]. Their detachment from the bony pelvis enables a tension-free reconstruction, and may favor development of physiological continence mechanisms, independently of inevitable pubic symphysis re-enlargement. Creation of temporary hypospadias is most often needed to maximize penile length. This technically demanding procedure requires thorough knowledge of detailed anatomy of the bladder exstrophy pelvis, as demonstrated in this video.

Ethical approval

No approval necessary.

Conflict of interest

Nil.

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References

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