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**Запоріжжя
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Demianiuk M.	67
AESTHETIC PRINCIPLES OF RECONSTRUCTION AFTER ONCO- UROLOGICAL PENILE AMPUTATION: A CASE-BASED ANALYSIS	
Siusiuka V., Belenichev I., Kyrychenko M.	69
CONTEMPORARY PERSPECTIVES ON THE PROPHYLAXIS OF HYPERTENSIVE DISORDERS OF PREGNANCY: ASSESSING THE EFFICACY OF COMBINED PREVENTIVE APPROACHES IN HIGH-RISK POPULATIONS	
Haidai N., Deinichenko O.	76
PREDICTORS OF PELVIC FLOOR MUSCLE DYSFUNCTION AND REHABILITATION FEATURES.	
Siusiuka V., Pavlov S., Kyrychenko M.	79
PREDICTION OF HYPERTENSIVE DISORDERS IN PREGNANT WOMEN AT HIGH RISK	
Siusiuka V.G., Onopchenko S.P., Kyryliuk O.D., Schevchenko A. O.	83
TREATMENT AND PROPHYLAXIS IN PREGNANT WOMEN WITH CHRONIC ARTERIAL HYPERTENSION	

AESTHETIC PRINCIPLES OF RECONSTRUCTION AFTER ONCO- UROLOGICAL PENILE AMPUTATION: A CASE-BASED ANALYSIS

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Penile reconstruction after oncological amputation remains one of the most technically demanding areas within uro-oncology, where functional preservation and aesthetic restoration are closely interdependent. While traditionally centered on tumor control and wound closure, contemporary strategies increasingly integrate principles of tissue geometry, vascular reliability, skin mobility, and proportional silhouette design. The appearance, pliability, and integration of the reconstructed organ significantly influence long-term sexual function, body image, and psychosocial adaptation.

This paper presents a case-based analysis following wide excision for long-standing penile carcinoma with extensive superficial destruction but preserved corpora cavernosa and urethra. The decade-long disease course resulted in complete loss of the native skin envelope of the shaft, prepubic infiltration, and partial scrotal involvement. Cooper's ligament was intentionally divided to prevent inward retraction of the preserved corpora and enhance visible stump length. Histopathology confirmed pT2 disease with skin and subcutaneous involvement, no invasion of the corpora or urethra, and clear surgical margins.

Reconstructive considerations and method selection

Several recognized reconstructive options were evaluated, including local scrotal flaps, perineal advancement flaps, split-thickness skin grafting, and free radial forearm phalloplasty. Local scrotal or perineal flaps were unsuitable due to excessive thickness, limited mobility, and the risk of bulky, asymmetric contours. Skin grafting alone could not provide sufficient elasticity or long-term durability over a 5-cm erectile stump.

Free-flap phalloplasty, although anatomically sophisticated, was unnecessary given the preserved erectile structures and would have introduced disproportionate morbidity.

A pedicled abdominal flap was therefore selected as the optimal balance of perfusion reliability, contour control, elasticity, and tissue availability—allowing full circumferential resurfacing while maintaining the patient’s intact erectile function.

Reconstructive stage The flap, elevated on epigastric perforators, was shaped into a skin envelope and anchored to the tunica albuginea with interrupted sutures, ensuring stable geometry and preventing shear. The donor site was closed primarily following mobilization of the abdominal wall. The recreated prepubic transition restored anatomical continuity and contributed to a natural silhouette.

Outcomes The patient achieved spontaneous voiding, preserved erectile response, satisfactory cutaneous sensitivity, and a symmetric, natural-appearing contour at rest. The intermediate aesthetic result met the patient’s expectations; prosthesis implantation remains a possible future step but is not required at present.

Conclusion

This case highlights several principles essential to aesthetic reconstruction after penile amputation:

- stump length, mons geometry, and skin-envelope quality are primary determinants of outcome;
- division of Cooper’s ligament may significantly enhance visible length where corpora are preserved;
- pedicled abdominal flaps provide an optimal combination of vascular reliability and aesthetic flexibility for extensive cutaneous defects;
- anchoring to the tunica albuginea ensures structural stability without microvascular anastomoses;
- even in long-standing, locally advanced disease, carefully tailored reconstruction can achieve functionally meaningful and aesthetically coherent results.