

THE FUNCTIONAL RESULT TWO YEARS AFTER A MICROSURGICAL PENILE REPLANTATION

Case report

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Abstract. We describe the technique of microsurgical penile replantation and a case followed up after two years. The patient was a young man with decompensated schizophrenia who emasculated himself with a kitchen knife. A particularly good functional result was achieved including restoration of sensation in the penile shaft and in the glans, and return of erectile capacity.

Key words: penile replantation, functional result.

Traumatic penile amputations are fortunately rare. The principal causes of penile amputation are self-emasculation in a schizophrenic person or in an intoxicated person with a severe personality disorder (6), amputation as a punishment by the wife to a philandering husband (as was common in Thailand in the 1970s) (2), or accidental amputation as a complication of ritual circumcision in a child (11, 15). In the western world self-amputation by a psychotic person is the most common aetiology.

Penile replantation was first reported by Ehrlich (5) in 1929 using a macrosurgical technique. With re-establishment of the corpora cavernosa and the corpus spongiosum the organ survived quite reliably. However, after this procedure skin necrosis was a common complication as was the formation of fistulas. According to one technique the denuded shaft was therefore temporarily buried in the scrotum (2, 10). The first successful *microsurgical* replantations of an amputated penis were by Tamai et al. (13) and Cohen et al. (4) independently in 1976. The addition of the microneurovascular repair enabled complete survival of the organ

with healing of the skin and return of erectile capacity. Since then microsurgical replantation of the penis has been reported several times, often as single case reports (7, 8, 14). A few review articles have also been presented in urological journals (1, 3, 9). However, as penile amputations are so rare, and plastic surgeons and microsurgeons therefore seldom get involved with the surgical treatment, we feel that it is worthwhile to report the replantation procedure and the particularly favourable outcome in this patient.

CASE REPORT

In April 1995 a 26-year-old schizophrenic student was brought to the emergency department in the University Hospital in Linköping. He had mutilated himself by amputating his penis 1.5 cm distal to the root with a kitchen knife within the previous hour (Fig. 1a). The organ was severed with one transverse cut. He had had paranoid hallucinations for several years saying that Satan was occupying his penis. He usually took antipsychotic drugs but had not had any during the week before the amputation. He was bleeding constantly from the root of the penis and a pressure dressing had to be applied to control this. The amputated part was 7 cm long and the wound had clean sharp edges (Fig. 1b). It was decided that replantation should be attempted as the conditions were judged to be favourable. The penis was stored at a temperature of about +2°C while the patient was taken to the operating theatre with minimum delay.

Clinical procedure

While the patient was being anaesthetised we started to identify the vital structures in the distal part comprising the urethra, the corpus spongiosum, the corpora cavernosa, one central artery in the right

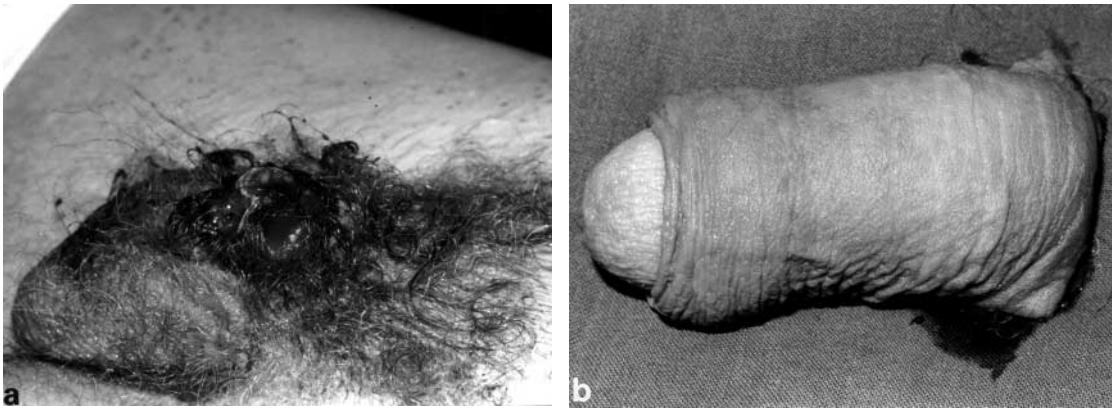


Fig. 1. (a) The proximal stump and (b) the amputated part.

corpus cavernosum, two dorsal arteries, one vein, and the two sensory nerves. The diameter of the larger one of the two dorsal arteries was 1.2 mm, the smaller 0.7 mm, the central artery was 1.0 mm, and the diameter of the dorsal vein was 3.0 mm. The proximal part had to be exsanguinated with a stasis string to control the bleeding from the corpora so that we could identify the corresponding structures. A suprapubic catheter (Cystofix[®]) was introduced to deviate the urine. The replantation procedure was begun by introducing a 12 Ch silicone Foley catheter into the amputated and the proximal urethra to act as a stent. Particular attention was then paid to the reanastomosis of the macroscopic structures to restore the anatomy as much as possible. Starting with the urethra it was repaired using loose continuous 5/0 polyglactin 910 (Vicryl[®]). The tunica around the corpus spongiosum was repaired with continuous 4/0 Vicryl[®]. The septum between the two corpora cavernosa and the tunica around the two corpora and finally the Buck's fascia were repaired in the same

fashion (Fig. 2). We did not try to anastomose the central artery because it would have been technically too difficult because of its central place in the cavernous tissue. As soon as these macroanastomotic procedures had been completed a slow venous bleeding was noted from the distal vein, although no vascular structures had been repaired. The operation was then continued with the microanastomoses. The 1.2 mm artery was anastomosed end to end with 10/0 polypropylene (Prolene[®]). After release of the clamps there was good colour and capillary refill in the distal part. The large vein was sutured with 9/0 nylon (S&T[™]). The second smaller artery was not repaired. The left and right nerve fascicles that were roughly 1 mm in diameter were coapted at the level of injury with 10/0 nylon. The skin was closed and an acrylic gauze dressing to keep the replanted part elevated was applied. Dextran was given intravenously during the operation and for three days postoperatively as prophylaxis against thromboembolism.



Fig. 2. On completion of the macroanastomoses before revascularisation. Arrow = level of anastomosis. Note proximal stasis sling applied.

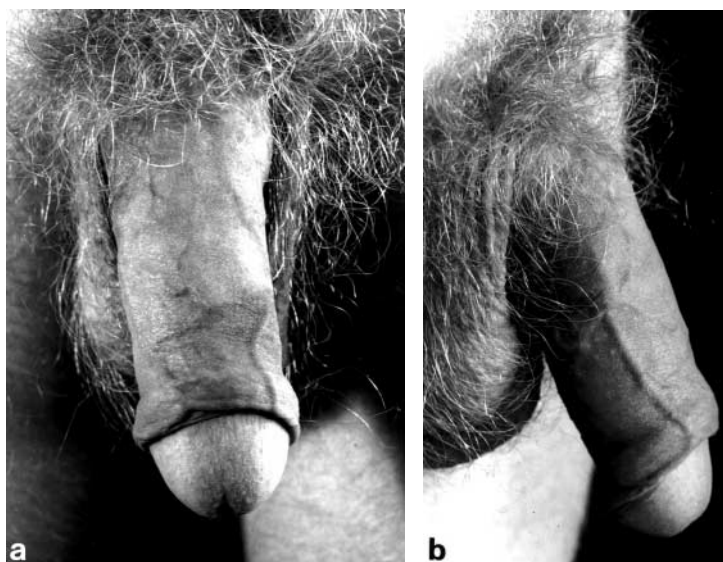


Fig. 3. Four months postoperatively. The external genitalia look normal. (a) Frontal aspect, (b) lateral aspect.

The patient was restarted on his antipsychotic drugs and given extra surveillance during the postoperative period. Antibiotic prophylaxis was given. The postoperative course was uneventful apart from considerable oedema of the skin of the penile shaft and the prepuce, however the glans did not swell. The oedema subsided within the first postoperative week, colour and temperature remaining normal. The urethral and cystostomy catheters were removed three weeks postoperatively and the patient could void normally.

He was re-examined four and 10 months postoperatively and he came back for a final set of pictures two years postoperatively. At four months the genitalia were grossly normal (Figs. 3a, b). Even then he admitted on questioning that both erection and ejaculation was possible. Ten months postoperatively the patient had a normal urine flow of 25 ml/second. He could distinguish between sharp and blunt objects on the penile skin and on the glans penis. He could localise touch to the left and right side of the shaft and on the glans. He claims that the penis behaves much as it did before the amputation with the length of 17 cm on erection compared with 18 cm before.

DISCUSSION

Other authors have advocated the repair of two dorsal arteries and possibly a profunda artery to maximise the inflow and facilitate erection of the replanted penis (4, 9). However, from this case it is evident that this is not necessary. The corpora cavernosi, which can be regarded as controlled arteriovenous fistulas, were filled by collateral

circulation as the level of injury was (and usually is (3)) distal to the entrance of the cavernous nerves and the profunda artery in the corpora. The dorsal arteries, one of which was anastomosed, also give off branches that enter the corpora and anastomose distally with the profunda artery in the glans penis. The meticulous repair and careful orientation of the macroscopic structures, particularly the tunicas around the corpora cavernosi, were probably also of importance for the return of sexual function.

At two years the patient was asked if he would cooperate for a possible photo of the penis in the



Fig. 4. The erected penis two years after microsurgical replantation.

erect position. As a normal reaction, the patient was a bit shy in front of the photographer who noted as soon as he came in to the room and raised his camera that the angle of erection would diminish (Fig. 4). This behaviour, however, displays the presence of a rapid neurovascular response to emotional stimuli. This patient is now well medicated and satisfied that his penis has been replanted. The continued psychiatric support is extremely important. He does not have a sexual relationship, but coitus should be technically possible. Apart from this the normalisation of the external genitalia allows the patient to attend public baths, and to void when standing.

Penile amputation injuries will probably continue to occur infrequently as a rare complication of decompensated schizophrenia, and criminal assaults may also occur. That penile amputation may occur as a consequence of ritual circumcision, however, is an example of an avoidable injury and raises a serious question mark about this tradition. Penile replantation is recommended, as the results after microvascular repair are favourable allowing return of normal sexual functions (12), and repeated self-inflicted injury is rare. In a follow up of 53 psychiatric patients with penile amputations only one repeated attempt at mutilation and one suicide were recorded (6). Our patient got a second chance to lead a normal life through the successful replantation. We feel that penile replantation with microsurgical technique is a worthwhile procedure that should be attempted whenever possible.

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