Caverno-saphenous shunt in the treatment of priapism

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Summary
The painful pathological condition of the penis, priapism, is usually associated with serious destructive changes which lead to impotence if treatment is withheld or delayed. Conservative therapy is slow, uncertain and usually ineffective. Early surgical decompression of the corpora cavernosa, repeated if necessary, is essential if impotence is to be averted. Two unusual cases of this condition recently seen at the University College Hospital, Ibadan, in which treatment had been delayed for periods previously thought to be too long for recovery are herein presented and the management described. It is advised that failure of the initial surgical operation calls for early re-operation to establish a new shunt.

Introduction
Priapism is defined as a painful pathologically sustained erection of the penis unrelated to sexual stimulation or desire. The term is derived from the ancient Greco-Roman god of fertility and harvest, Priapus. It is a surgical emergency, affecting mostly the under-40 age group. Its cause is obscure. When prolonged, detumescence to the normal condition is rare. If treatment is withheld or delayed, impotence is the rule. Conservative therapy is slow, uncertain and usually ineffective. Emergency surgical treatment preferably within the first 48 hr (Garrett and Rhamy, 1966; Ellis, 1974) offers a good chance of halting the destructive changes taking place in the corpora cavernosa thereby averting the misfortune of impotence. Two unusual cases of this condition are herein presented. The first was idiopathic in origin and had lasted for 7 days. An initial bilateral caverno-spongosum anastomosis produced an indifferent result. Following a right caverno-saphenous anastomosis 14 days later, however, detumescence, pain relief and a partial return of potency was achieved. The second case, due to sickle cell anaemia, had had a caverno-spongosum shunt performed with little improvement. A caverno-saphenous shunt established 5 days later led to recovery of potency.

Case reports
Case 1
A 25-year-old farmer presented with a 6-day history of priapism. He stated that erection had occurred soon after passing urine on waking up in the morning. He had had no previous episode. His previous medical history was uneventful. He was married and had a 3-year-old son. Systematic enquiry elicited no significant information.

Examination revealed a fit young man in considerable distress. Temperature was 37°C; pulse, 82/min, regular; BP, 120/80 mmHg; PCV, 38%. The penis was strongly erect, warm and very tender. The corpora cavernosa were stony hard. Conservative treatment with sedation, ice packs, analgesics and heparin was instituted for 24 hr with poor results. Emergency surgery was decided upon. Under epidural anaesthesia, the patient was placed in the lithotomy position. After incision and evacuation of the dark oily sludge from the cavernosa, complete detumescence was achieved. A bilateral caverno-saphenous anastomosis was established. Inspection 48 hr later revealed only 20% flaccidity. Further inspection after 96 hr did not demonstrate any improvement. A decision to observe the patient for a few days was reached. Further improvement was minimal. The organ was now noted still to be painful, turgid and woody in appearance. Re-operation to establish a caverno-saphenous shunt was undertaken 14 days after the first operation.

A vertical incision, approximately 15 cm long was made in the right groin in the line of the long saphenous vein. By a combination of blunt and sharp dissection, this vein was explored, freed and its tributaries ligatured. A suitable length, approximately 12 cm, was mobilized, irrigated with heparinized saline and swung medially through a subcutaneous tunnel to the base of the penis. Here another incision was made to expose Buck’s fascia. This was incised to evacuate more of the grumous oily material to achieve flaccidity. A caverno-saphenous shunt using a double-ended 5/0 atrumatic silk suture on a 16 mm needle was then established. Patency of the shunt was confirmed by squeezing the penis whereupon the saphenous vein was seen to fill. The wound was closed. Flaccidity of about 60% was maintained. With a 14 F. Foley urethral catheter in situ, a tight wet crepe bandage was applied. After 48 hr, detumescence was estimated at 80% and

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there was complete pain relief. By the 6th postoperative
day, the organ was no more than approximately
10% larger than normal. Out-patient follow-up
showed continued improvement, and by the 3rd
month, the patient claimed that he was capable of
partial erections.

Case 2

A 26-year-old man, known to have sickle-cell
haemoglobinopathy presented with a 48-hr history
of priapism of sudden onset. He had had 2 previous
episodes each of 2–3 hr duration. He had had several
sickle-cell crises and had suffered an attack of in-
fected hepatitis 6 months earlier. Examination
revealed a young man, small for his age, in considerable
distress. Temperature was 37.5°C. The PCV was
32%, WBC, 11.9 x 10⁹/l. The genotype was HbSS.
The urine microscopy and culture showed normal
findings. The liver function tests were normal as was
the chest X-ray.

The penis was strongly erect and tender, and
palpation confirmed that the hardness was confined
to the corpora cavernosa only. Rectal examination
was normal.

Conservative treatment with sedation, ice-packs,
and analgesics were tried with little effect. A bilateral
caverno-spongiosum shunt was then performed but
the immediate result was not impressive. Obser-
vation over the next few days produced no obvious
improvement with persistence of turgidity and pain.
Five days after the caverno-spongiosum shunt, a
right caverno-saphenous shunt operation was under-

Dark oily sludge was massaged out of the penis
whereupon the organ became semi-flaccid. Inflam-

contraction and relaxation of these muscular cushions
following upon parasympathetic influences reaching
them via S₂–S₄ (Henderson and Roepke, 1933) which
caused filling and emptying of the lacunae of the
corpora cavernosa, thereby producing erection or
detumescence.

Failure of relaxation of the muscular cushions
within the arterioles with contraction of those in
venules and A—V shunts led to continued arterial
blood input into the cavernous sinuses, thereby
maintaining the erections. Stasis of the blood in the
sinuses caused biochemical and haemodynamic
changes within it (Chauvin, 1938; Caccioli, 1944).
Thus the anoxia within the cavernous sinuses led to
increased permeability of the vessel walls, so that
fluid was lost from them. The increased viscosity
(Caccioli, 1944) led to further stasis, thereby
perpetuating the erection. Organization of the ‘pseudo-
thrombosis’ within the sinuses as well as the oede-
matous changes and fibrosis in the trabeculae pro-
duce irreversible changes in the corpora cavernosa
so that only a woody, fibrotic impotent organ re-

Various factors contributing to the initiation of
priapism have been identified. The classification by
Becker and Mitchell (1965), itself an extension of
Hinman’s (1960) earlier study, is comprehensive and
useful in understanding the pathophysiology
of the condition. Neurogenic lesions: psychic, tabetic, cerebral and cord; drugs: aphrodisiac mixtures, e.g. cantharides, yohimbine; mechanical lesions: perineal trauma, leukaemic infiltrations and neoplasms of the penis are rare. The haemoglobinopathies, including sickle-cell anaemia, are more common and account for about 25% of all cases (Becker and Mitchell, 1965). The commonest, worldwide, is the idiopathic type in which no predisposing factor is identifiable. This forms approximately 55% of all cases (Becker and Mitchell, 1965).

The last 50 years have seen several lines of surgical treatment advocated by various workers. Proponents of each method have claimed varying degrees of success although a careful appraisal of these methods by other workers yields results which are either poor or indifferent. These treatment modalities have included:

1. Large bore needle aspiration and irrigation of the corpora cavernosa with heparinized saline (McKay and Colston, 1928).
2. Ligation of the internal pudendal artery (Burt, Shirmer and Scott, 1960).
4. Caverno-saphenous shunt (Grayhack et al., 1964).

Successful treatment of this condition aims at preventing the organization of the pseudothrombosis. Herein lies the rationale for early decompression of the cavernous and a shunt operation. Conservative treatment with sedation, cold compresses, heparin, anaesthesia (general, spinal, epidural, caudal) and stilboestrol, are ineffective and serve only to delay definitive therapy. Of 21 patients treated conservatively and studied by Grace and Winter (1968), only 5 were judged successful. Farrer and Goodwin (1961) recorded various degrees of impotence in 14 of 15 cases treated, while Hinman (1960) estimated a failure rate of 71% (5 of 7) treated by aspiration and irrigation.

The operation of caverno-saphenous anastomosis after the manner of Grayhack and his colleagues (Grayhack et al., 1964; Garrett and Rhamy, 1966; Martin, Shapiro and Buckholder, 1969) allows draining of the cavernosa of their contained dark gummos material and enables a temporary drainage shunt to maintain detumescence and prevent destructive changes taking place in the corpora cavernosa.

In Ibadan, as a first line of surgical treatment, the caverno-spongiosum shunt (Quackels, 1964; Sakatoku et al., 1968) is preferred, for the distal parts of the long saphenous vein are usually observed to be involved in the chronic lymphadenitis of the region, with consequent fibrosis, narrowing and sometimes loss of patency of this vessel.

Successful treatment in these cases was perhaps fortuitous but the operation has its adherents and in many instances, good results have been reported (Garrett and Rhamy, 1966; Foley and De Jode, 1975).

The most unusual aspect of these cases was the time interval between the onset of the priapism and the second operation. In the first case, operation had been performed 7 days after the initial symptoms.
with indifferent result. Detumescence was estimated at only 20%, the oedematous woody organ remaining as painful as before. The caverno-saphenous shunt performed 14 days later achieved immediate detumescence and significant pain relief. Partial potency was achieved over the next 3 months. Although the period of priapism was not so long in the second case, re-operation was performed 7 days after its onset. Many workers (Hinman, 1960; Howe et al., 1969; Medeiros and Carvalho, 1973) have reported loss of potency after 6 or more days of priapism, although some claim residual potency only at the base of the organ, allowing intromission to occur. That truly normal erections are ever regained after prolonged tumescence is a rare occurrence. Of 5 cases of priapism treated by Garrett and Rhamy (1966) potency was recorded in 40% in all of which the priapism had lasted not more than 48 hr. In the series reported by Martin et al. (1969), potency was regained by 2 patients whose priapism had lasted one and 3 days respectively and lost by one who had been afflicted 6 days earlier.

The need for emergency surgery in the treatment of this condition is thus not in doubt. Early operation to drain the dark, oily, grumous material from the corpora cavernosa and establish a caverno-saphenous shunt would seem to be crucial to return of potency. It is advised that failure of the initial surgical operation calls for early re-operation to establish a new shunt, and that the heaviest responsibility rests upon the attending clinician.

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