

The Ross circumcision ring

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The Ross circumcision ring was invented by Dr Cecil J. Ross and first patented in the United States in 1942.¹ It was designed to make the performance of circumcisions simpler and quicker, while also achieving a uniform and aesthetic result. This was possible because it allowed the removal of excessive foreskin, haemostasis, and wound approximation to be achieved with a single ligature.

The set contains differently sized steel rings to suit varying penile sizes (Fig 1). On one side of each ring is a semicircular 'handle' fixed diametrically at two points on the circumference of the ring such that it is set at an angle to its main axis (Fig 2a). From the inner circumference on the other side a short skirt extends outwards to form a bell, with a groove formed between the skirt and the ring (Fig 2b). There is a notch on the inferior side of the bell (Fig 2c).

When used, a bell of an appropriate size is placed on the glans of the penis after its adhesion with the prepuce is broken. The prepuce, in most cases after a dorsal slit, is comfortably (ie, without excessive difficulty and force) pulled over the bell, the notch clearing the frenulum on the ventral side, and the handle aligned in the long axis of the penile shaft, whereupon the coronal plane of the ring becomes, by design, oblique, falling parallel to the coronal sulcus. A tight ligature is tied down on the bell against the groove between the skirt and the ring, achieving total strangulation of the distal part of the prepuce. The redundant prepuce beyond the ligature is generously excised and trimmed down to



FIG 1. Ross circumcision ring set donated by the family of Dr Chiu-kwong Yu

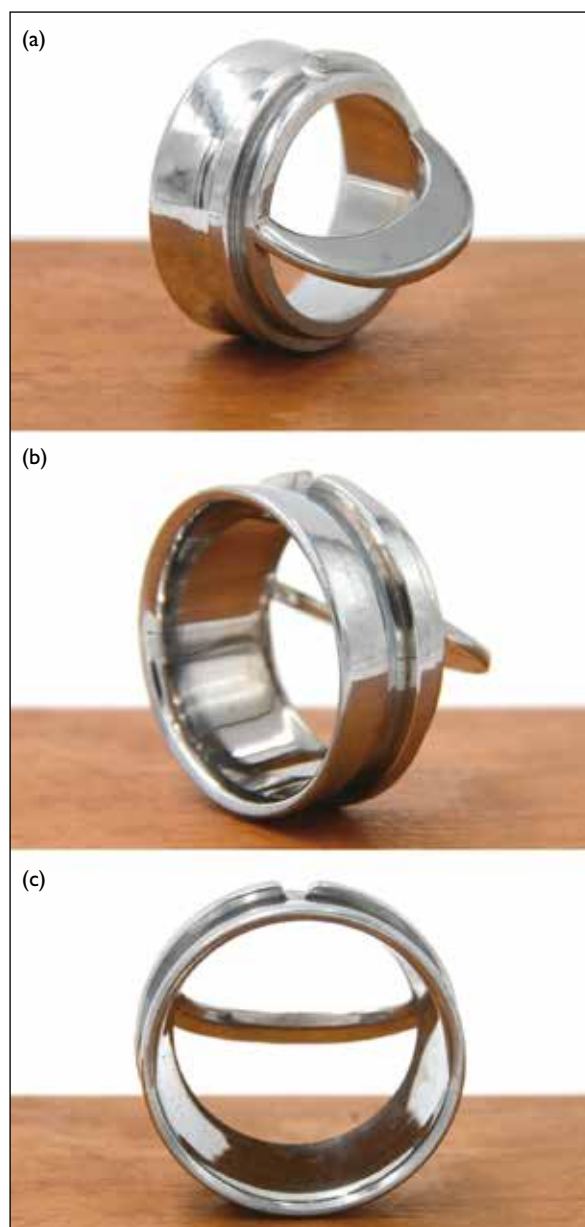


FIG 2. The Ross circumcision ring viewed from different angles: (a) semicircular 'handle' fixed on the circumference of the ring; (b) groove formed between the skirt and the bell of the ring; and (c) notch on the inferior side of the bell of the ring

the edge of the ring to reduce the bulk of skin that would inevitably become gangrenous subsequent to the strangulation; minimal or no bleeding would be expected due to the tight proximal ligature. Necrosis

of the skin under and distal to the ligature occurs any time after 72 hours, at which point the ring falls off with the dead skin, leaving a freshly healed wound and a glans denuded of excessive foreskin. The ring is retrieved, cleansed, and sterilised for re-use. The wound takes a few more days to be securely healed.

The Ross ring would later evolve into the Plastibell, which has a similar design but is made of plastic and is thus disposable; the handle is also attached to the ring using an easily breakable design, allowing it to be removed at the end of the procedure. The Plastibell was marketed in 1955 and granted a patent in 1962, largely because of the novelty of the breakable handle, although the changed material from metal to plastic and the gross similarity to the Ross ring would not have helped.²

The methods of circumcision are as diverse as its history is long (see below) and any attempt to list them exhaustively would be beyond the scope of this article. Suffice to say that surgeons of time past, and of the present day as well, were all familiar with and widely practising the tailor-cut and suturing method, in which the excessive length of the prepuce would be excised, tailored to need, and after adequate haemostasis with monopolar or bipolar cautery, the wound would be closed with sutures.

History of circumcision

The history of circumcision goes back to the era of ancient Egypt, as evidenced by the discovery of a depiction of it being performed on the east thickness of a doorway to Ankhmahor's tomb, dating back to the reign of Pharaoh Teti (2355-2343 BC) of Dynasty 6.³

Circumcision was also practised as a religious rite in the Abrahamic faiths of Judaism and Islam. The patriarch Abraham originally lived in Ur, then an advanced and sophisticated Mesopotamian city where Sumerians and Semites mixed. According to the Bible, Abraham had a covenant with God that he and his descendants would be circumcised with a flint blade on the eighth day after birth as a symbolic reminder of the promises the Lord made to Abraham regarding his posterity (Genesis 17:11-

14); since Islam recognises Abraham as a prophet, Muslims practised a similar ritual, but it was done in adolescents rather than neonates. Today, circumcision is still widely practised by Jews and Muslims worldwide. In Israel, newborn boys are circumcised in a traditional ceremony called a *brit milah*, where the foreskin is removed by a *mohel*, more a rabbi than a medical practitioner.⁴

From Egypt the practice spread both north and south. There is evidence that it was prevalent in modern-day Syria, Lebanon, and the Arabian Peninsula from 600 to 500 BC. The southward spread reached across the Sahara as far as the banks of the Niger River, and along the east coast of Africa to Somalia and Ethiopia through people of Sumerian and Semitic origins. Between AD 500 to 1000 it spread further south to the tribal people of Mozambique; today, the Bantu peoples of South Africa are still performing ritual circumcision.⁵

Circumcision as a cultural practice and preventive healthcare measure

In Oceania, circumcision was a rite of passage to adulthood for the Aboriginal and Polynesian peoples. In these cultures, the foreskin was removed with seashells and haemostasis achieved by the individual squatting or standing for several hours over the smoke from a fire covered with eucalyptus leaves, with the blood dripping into the fire considered symbolic of one's sympathy with women's menstruation.⁵

At the turn of the 19th century, some claimed that infant circumcision would discourage masturbation, with all its associated 'ills'. In the Second World War, the Korean War, and the Vietnam War, circumcision was recommended to the United States troops as a preventive measure against sexually transmitted diseases. Circumcision has now been shown to reduce the infection rate of human papillomavirus and therefore the incidence of cervical cancer. Since the association of human immunodeficiency virus infection and acquired immunodeficiency syndrome and uncircumcision was first established the procedure has been gaining popularity.

References

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