

## Case Report

# Glans Penis Ischemia Following Circumcision

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## Abstract

Circumcision is probably the most common urological operation performed worldwide, regardless of religious or medical reasons. It is probably the first operation that a urologist in training performs. Nevertheless, although it looks like an easy operation, it is not free of complications. Glans ischemia following circumcision is a rare event. We reported the case of a 16 year-old presented to the emergency department with glans ischemia in the first 24 hours after circumcision. The successful management and the restitution ad integrum of the organ was due to the use of oral pentoxifylline and hyperbaric oxygen treatment.

**Keywords:** Glans penis; Ischemia; Circumcision; Hyperbaric oxygen treatment

## Case Presentation

A 16-year-old boy (A.B.) in apparently good health was admitted to the emergency department with a “black glans” within 24 hours of circumcision (Figure 1). Vital signs were normal. Physical examination highlighted an ischemic glans with oedema and some clotted areas associated with pain and severe discomfort. All the sutures were checked meticulously for any evidence of skin tension and a couple of sutures were removed from the frenulum area. A full blood count with coagulation screening was performed and showed normal parameters. Penile duplex ultrasound showed a well perfused penis. He had a serrate phimosis and therefore a dorsal slit was performed in order to expose the glans penis, followed by the Sleeve technique under general anaesthesia. At the end of the operation a dorsal block was performed.

The treatment consisted of: 4000 UI of low molecular weight heparin daily for 7 days, pentoxifylline 600mg BID for 7 days, plus 8 sessions of hyperbaric oxygen therapy of 2 hours each at >2.5 atmospheres [1,2]. At the end of the proposed therapy the glans was completely healthy and pink (Figure 2).

## Discussion

Glans ischemia after circumcision is an uncommon event. The cause of glans ischemia after circumcision might be one of the following:

Excessive use of monopolar cautery, tight dressing, tight suture line, dorsal nerve block with local anaesthetics, haematoma or inadequate surgical technique. There is an increased risk with the presence of comorbidity, such as Diabetes mellitus vasculopathies, but not in our case as the young patient was fit and healthy. The goal is to promote a peripheral good blood supply and microcirculation and therefore oxygen supply to the tissue, preventing an irreversible glans necrosis. We think that the possible aetiology of the ischemia in our case might be due to a dorsal nerve block with 10 ml of ropivacain 7.5mg/mL without adrenaline resulting in a perforation of an artery or a vein [3].

The use of low molecular weight heparin for preventing and

treating thromboembolism is well known in pelvic surgery.

Pentoxifylline is a competitive nonselective phosphodiesterase inhibitor which raises intracellular CAMP, activates PKA, inhibits TNF and leukotriene synthesis, and reduces inflammation and innate immunity [4,5].

It increases blood flow to the affected microcirculation and enhances tissue oxygenation. In addition, it has been shown to produce a hemorrhheologic effect, lowering blood viscosity, improving erythrocyte flexibility, decreasing the potential for platelet aggregation and thrombus formation.

Hyperbaric oxygen treatment increases the amount of oxygen dissolved in the bloodstream. In fact, at 2.5 atmospheric pressures, the transportation of free oxygen from blood into the tissues is increased tenfold, which can be useful when capillaries are damaged.

The aim of this treatment is to raise tissue oxygen values towards normal to initiate normal cellular repair mechanisms. There methods in which hyperbaric oxygen treatment affect the tissue are through the vasoconstrictive effects, the down regulation of inflammatory cytokines and up-regulation of growth factors, the leukocyte effects and the antibacterial effects.



Figure 1: Glans ischemia at admission.



**Figure 2:** Complete restitution ad integrum, 14 days after the admission.

In our case we think that the quick response and improvement of the glans color is prevalently due to the increased oxygen delivered to the penis.

## Conclusion

In conclusion, glans ischemia should be treated as soon as possible to prevent and avoid permanent damage. Once obvious causes are excluded, a combination of pentoxifylline and hyperbaric oxygen treatment can lead to a great result, with the restoration of the anatomy and function.

The successful management and the feasibility of this case were due to the fact that the young boy, and especially the parents, trusted us at every moment; before and after the operation, they were given a detailed explanation of all the steps and what they should expect, exchanging continuous feedback.

Nevertheless, good communication and collaboration between patient and colleagues and staying updated on current literature is a key point.

## References

1. Pepe P, Pietropaolo F, Candiano G, Pennisi M. Ischemia of the glans penis following circumcision: case report and revision of the literature. *Arch Ital Urol Androl.* 2015; 87: 93-94.
2. Migliorini F, Bianconi F, Bizzotto L, Porcaro AB, Artibani W. Acute Ischemia of the Glans Penis after Circumcision Treated with Hyperbaric Therapy and Pentoxifylline: Case Report and Revision of the Literature. *Urol Int.* 2016.
3. Garrido-Abad P, Suárez-Fonseca C. Glansischemia after circumcision and dorsal penile nerve block: Case report and review of the literature. *Urol Ann.* 2015; 7: 541-543.
4. Karaguzel E, Tok DS, Kazaz IO, Gur M, Colak F, Kutlu O, et al. Postcircumcisional ischemia of the glans penis treated with pentoxifylline. *Case Rep Urol.* 2013; 2013: 278523.
5. Aslan A, Karagüzel G, Melikoglu M. Severe ischemia of the glans penis following circumcision: a successful treatment via pentoxifylline. *Int J Urol.* 2005; 12: 705-707.