A Technique for Clamping Calcified Iliac Arteries

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Introduction

In the setting of aortic aneurysm surgery and other arterial bypass procedures, calcification may be encountered in the iliac vessels. Usually this involves only the posterior hemi-circumference of the vessel. Clamping such a vessel entails a risk of vessel rupture, luminal occlusion by calcific fragments or dissection. Described is a simple technique to protect against this risk. It is suitable for use in the type of vessel described above where calcification involves some part of the vessel circumference.

When in good health, vessels circular in cross-section are amenable to clamping because their walls are pliant fibromuscular tissue. The vessel’s circular cross-section can be easily deformed to two flat surfaces in close apposition between the jaws of the clamp. Once the vessel wall is calcified, the vessel cross-section remains circular but its pliability is lost. Clamping, in effect, attempts to deform a partially brittle circle into two flat lines. Fracture or fragmentation is the likely result.

Technique

The vessel in which part of the arterial circumference is pliant (uncalcified) and part is brittle it may be protected as follows when clamped. A dental roll is pushed against the pliant section of the arterial wall thus occluding the vessel by invaginating this part of the artery wall (Fig. 1). The clamp is then applied with minimal pressure. Thus the dental roll allows the artery to be occluded whilst offering support to brittle areas of the vessel wall held within the clamp. The vessel is purged of debris by flushing prior to completing the distal graft anastomosis.

Discussion

On at least 10 occasions the corresponding author has put the described method to good use without complication although optimal positioning of the dental roll and the clamp may take several attempts. Whilst CT scans draw attention to the presence of calcific deposits in the vessel wall, the scans are not accurate enough to predict which vessels might be amenable to this technique in our experience. Careful identification of patients preoperatively is not essential as the technique is simple and requires no special equipment. Clinical judgement is exercised intraoperatively.

When faced with the dilemma of calcified iliac vessels the other alternatives might be to occlude with a catheter balloon or to choose a more distal site for control or grafting. The following advantages are conferred by our technique: As an alternative to using balloon occlusion, more reliable haemostasis is achieved; catheter balloons tend to become dislodged and correct balloon pressure can be difficult to judge safely. In addition, less instruments and equipment interfere with the operative field. As an alternative to choosing a more distal site for control or grafting, the infective risks of operating at the groin are excluded and time in performing extra dissection is also saved.

We have come across no mention of this technique in surgical text books or periodicals and believe it to be effective, safe, simple and original.
Fig. 1. Diagrammatic cross-sections of the partially calcified vessel before and after occlusion using the technique described.

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References