

44538 - ARTERIAL TRAUMA DURING CENTRAL VENOUS CATHETER INSERTION: CASE SERIES AND PROPOSED ALGORITHM

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Background:

Percutaneous central vein catheterization is a frequently used in anesthesia. Inadvertent arterial puncture with a small needle is often without consequences but can lead to devastating complications if it goes unrecognized and a large-bore catheter is inserted in the artery. The present study reviews our experience with this complications and the literature to determine the safest way to prevent and manage catheter related arterial injury during jugular or subclavian cannulation.

Study design:

We retrospectively identified all cases of iatrogenic carotid or subclavian injury following central venous catheterization in our hospital. We also reviewed the literature (1980 – 2006) related to arterial misplacement of a large bore cannula (? 7 french) in adult patient. Local IRB Approval was obtained for this study.

Results:

Five patients were treated for CRCAI in our hospital. Three were treated by immediate catheter removal and compression, and all had severe complications: major stroke and death in one case and surgical intervention to treat a false aneurysm in the two others. Two patients with subclavian artery trauma were treated through an endovascular approach without complication. Studies comparing ultra-sound and skin landmarks for venous central cannulation showed lower arterial injury rate with ultra-sound use.

Five articles met all our inclusion criteria for arterial injury management, including 32 patients: 17 patients were treated by immediate removal of the catheter and application of direct external pressure: 8 of them (47%) had major complications which required further interventions and 2 of them died. The remaining 15 patients were treated by immediate surgical exploration, removal of the catheter and repair of the artery under direct vision (n=13) or by endovascular approach (n=2), without any complications (47% vs 0%, p=0.004).

Conclusion:

Introduction of a large bore catheter in a cervical artery is a devastation complication.

Percutaneous central venous cannulation using the anatomic landmarks technique carries a significant risk of arterial puncture/cannulation. Dynamic ultrasound guidance results in better

initial success rate and lower immediate complications compared to the landmarks. Once recognized, large bore catheter in a cervical artery should not be removed. The proposed treatment of a catheter in a carotid artery is surgical exploration and repair of the artery under direct vision, followed by ultra-sound examination of the artery. Subclavian injuries should be managed by an endovascular or surgical approach. If patient is sedated, prompt neurologic evaluation is required.