Short Report

Placing of Permanent Catheter through Right Anterior Mini Thoracotomy in Patients with Chronic Renal Failure

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We reviewed 8 patients who had intra-atrial dialysis catheter placement between March 2003 and August 2005. In all of the patients right atrium is reached through a anterior right mini thoracotomy under intratracheal general anesthesia. We believe that in these patients in whom the other hemodialysis methods are exhausted right atrial permanent catheter usage for hemodialysis is an effective solution.

Keywords: Hemodialysis; Intracardiac catheter; Vascular access.

Case Report

With increasing survival for the chronic renal failure serious problems appeared with access methods. We present 8 patients in whom we resorted to a right atrial catheters. All patients were operated between March 2003 and August 2005 in our clinic. The mean age for our patients was 54 (38–66). All patients had previous bilateral upper extremity radiocephalic and brachiobasilic arteriovenous fistulas which had failed. All patients had upper extremity permanent catheters placed after the fistulas had failed. They subsequently had temporary femoral catheters inserted when the upper extremity dialysis catheters failed. Before the operation all of our patients had venous Doppler ultrasonography and venography for both upper extremities, which showed that the venous distal beds were inadequate for arteriovenous fistulas, and that the subclavian and internal jugular veins were occluded.

All patients were operated on general anesthesia and endotracheal intubation. Right anterior mini thoracotomy was performed through the sixth intercostal space with a 4–5 cm transverse incision. After the right lung was retracted, the pericardium was opened and a purse string suture with 2.0 ti-cron was inserted in the right atrial auriculum. A 12f × 28–32 cm intra-atrial silicone double lumen catheter- permanent hemodialysis catheter was inserted through a small atriotomy. We closed the right atriotomy with a 1.0 suture after tying the purse string. Permanent hemodialysis catheter was subsequently placed out of the thorax through sixth intercostal space and then tunneled subcutaneously tunnel to the anterior axillary line in the fifth intercostal space and fixed to skin with 1–0 silk suture (Fig. 1).

One of the patients died because of metabolically reasons on the first postoperative day. All other patients were transferred to the nephrology clinic on the first postoperative day. Patients have been followed up with a mean 10.2 months (range, 3 to 15). All of the patients are still having hemodialysis through the intra-atrial catheter.

Discussion

The average one-year patency of arteriovenous fistulas is 80%. The patency for catheters ranges between 73–84 days. The risk factors for thrombosis are diabetes mellitus, hypoalbuminemia, and older
Oral anticoagulant agent usage for thrombosis is controversial. Asetilsalisilic acid and clopidogral usage have been researched.

Currently, new methods for hemodialysis access such as the transhepatic route, percutanous transrenal catheter placement, placing catheter in the superior vena cava by the parasternal approach, or placing the catheter in the inferior vena cava by a direct percutanous puncture have been described. In these techniques the patency rates of the catheters are said to be low because of the complications like thrombosis, infection, malfunction and venous laceration. The disadvantages of intra-atrial permanent catheters are: thrombosis, infection, catheter dysfunction, and a second operation is needed to remove the catheter in case of a successful renal transplant. In spite of these disadvantages, the possibility of early hemodialysis with flows of 350–400 ml per minute, and the encouraging early and medium term patency rates are promising. Furthermore, thrombosis and infective endocarditis can be diagnosed and followed up by echocardiography. Despite the disadvantages we believe that placing a right intra-atrial permanent catheter for hemodialysis in patients for whom the other hemodialysis methods are impossible is a good alternative as a last solution.

References

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