Femoral Port Placement – Report of Two Cases

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Received: 26 March 2011 / Accepted: 5 May 2011 / Published online: 24 May 2011
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Introduction

Use of totally implantable venous access devices for administration of chemotherapy has found increasing usage even in developing countries like India. Sometimes, it is an essential component of therapy. This device, commonly referred to as chemoport is usually placed over the chest wall below the clavicle or sometimes in the arm [1]. Commonly either the internal jugular vein or the subclavian vein is punctured to get the central venous access. The vein (subclavian or internal jugular) and the side (right or left) is commonly chosen based on the ease and personal choice of the performer; but in addition is also dictated by other factors including the disease for which this access is obtained. Again, an open approach or seldinger technique could be used. In the open approach, cephalic, internal or external jugular veins are accessed [1]. Alternate approaches including trans lumbar, saphenous and femoral veins are used when there are constraints to use the veins mentioned earlier [1]. In patients with breast cancer, for practical reasons, ports are placed on the contralateral side. However, in patients with bilateral breast cancer, the placement of port becomes tricky with the use of internal jugular or subclavian approach. In this case report we describe our experience of two cases and their outcome of

using the femoral approach to place the port in patients with bilateral breast cancer.

Case Report

Case 1

A 74 year old woman had undergone bilateral modified radical mastectomy for carcinoma breast. She required placement of chemoport for administration of chemotherapy. Since she required bilateral chest wall radiation, the venous access had to be from veins other than internal jugular or subclavian.

The catheter was placed in the inferior vena cava by a left femoral approach with seldinger technique. After administration of local anaesthesia, the left femoral vein was punctured medial to the palpable femoral artery. After confirmation of the needle in the vein by free flow of venous blood, the guide wire was placed in the inferior vena cava. The needle was withdrawn, and a small stab was made adjacent to the guide wire to enlarge the skin opening. Subcutaneous pocket was created on the left side two inches below and one inch lateral to the umbilicus on the left side on the spino-umbilical line. This would ensure that the port would be placed below the umbilicus and over the rectus sheath for proper anchoring. The sheath and dilator were advanced over the guide wire and position confirmed on fluoroscopy. The dilator was withdrawn with the guide wire and the catheter was introduced into the sheath and placed in the inferior vena cava. The other end of the catheter was then brought out through the wound created in the abdominal wall (pocket for port placement) using a tunneler. After ensuring that the tip of the catheter was placed below the diaphragm

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(Figs. 1 and 2), the catheter was connected to the port and the catheter lock advanced over that. The port was then fixed in the pocket created to prevent rotation and skin incision was closed. The skin puncture site was also closed. The port was accessed with non coring Huber needle and flushed with heparinized saline to confirm the patency. There was skin erosion after 13 months. The port was then explanted.

Case 2

A 40 year old woman had bilateral locally advanced breast cancer for which she required chemotherapy. A right femoral approach was used and the catheter was placed in the same way as described in the earlier case.

There were no complications during insertion of the port. The femoral veins were accessed easily in both cases. In both cases, chemotherapy could be administered through the port and major problems were not encountered. The port was explanted after 1 year in the first case and patient is alive with disease after 1 year in the second case. In the one case, the flow of fluids connected to the port varied depending on the posture. The flow would be good if small cotton ball was placed with pressure over the skin fold. This practice was adopted in that case to ensure good flow. There was no infection at the skin puncture site or at the port placement site. The port was retained 12 months after placement and the patient is alive with disease.

Discussion

Usually, chemoports are placed over the chest wall below the clavicle after the access through the subclavian or the

Fig. 1 The catheter placed in inferior vena cava; tip below the level of diaphragm

Fig. 2 The port with catheter connected. The *dotted horizontal white arrow* above indicates the port. The *horizontal bold black arrow* indicates the skin staple line. The *vertical dotted black arrow* indicates the undulated catheter beyond the attachment to the port. The *horizontal white bold arrow below* indicates the catheter turn from subcutaneous position to the femoral vein. The apparent kink (while actually there is none) is due to the end-on view

internal jugular veins. These procedures result in the catheter being placed in the superior venacava and the access site including the basilic vein being from its drainage veins. Alternative access is used selectively [1]. These include translumbar, saphenous or femoral veins and result in the catheter being placed in the inferior vena cava with access from one of its draining veins. These accesses are used only when there are constraints to use the standard venous accesses. There could be higher complication rate for these alternative accesses in the long term usage [2, 3]. Femoral vein was chosen as internal jugular or subclavian vein access could not be used. The port in that situation would have to be placed over the chest wall which would be incorrect as it would be in the field of radiation. The access through basilic vein was not used. In the first case, patient had undergone bilateral axillary dissection. This would result in potential edema over the upper limbs. In addition it would be better to avoid injury to the tissues in the drainage areas. In the second case, the patient could potentially undergo axillary dissection. Hence, in both cases, basilic approach was not used. Another approach is midline or parasternal placement of the port [4]. This approach was not used due to lack of adequate subcutaneous tissue in that area and scarring. An alternative potential site is placement of the trapezius port [5, 6]. This site was not used as these patients had locally advanced breast cancer and it was likely that supraclavicular area would be included in the radiation field.

A safe alternative approach to access central veins is the placement of femoral port in those where standard approaches are contraindicated [7]. This approach has acceptable long

and short term complications. Two large studies have shown good results with femoral approach [8, 9]. In the large study of 86 patients with femoral port, they reported 2.3% of groin hematoma and port infection while there was 1.2% groin infection [8]. We also used this femoral vein approach. In both the cases, there was no procedure related complications. However, in one case there was a problem with flow of fluids which was overcome with external pressure by a cotton ball. We attribute this to the skin folding over the abdominal wall (Fig. 2, dotted black arrow). This causes the catheter to be folded or kinked and hence prevents free flow of fluids. On cotton pad application, the area is flattened and hence there would be free flow. This problem has not been encountered by other authors. Probably they had implanted it in lean patients or through deeper layers of subcutaneous tissues where the skin folding might not have an effect. In addition, sometimes they had used thigh or a place near anterior superior iliac spine as the port site. This would have avoided the skin folding. We used the site below the umbilicus as Indians tie their undergarments at or just below the umbilicus. In addition, we thought that rectus sheath would act as adequate support when the port is accessed for chemotherapy administration. One patient had skin erosion for which the port had to be explanted. Skin erosion is a rare complication leading to port removal [1, 10]. It has been attributed to repeated punctures at the same point. In this case, although repeated same point punctures could be a cause, tight placement or tying of undergarments over the port as well as abrasive forces of undergarments could be a valid cause. We were apprehensive of infection at femoral vein access site in the groin. Both our patients did not have infection and the large series also reported only one case of groin infection [8]. Lateral thigh or abdominal wall has been used for port placement [8]. We preferred abdominal wall to thigh. Although mistaking appendicitis for port infection was the reason for left femoral port placement [8], we did not find that as a valid reason for choosing the side and hence depending on ease of access we used right or left femoral vein for access. Complications like venous thrombosis can occur [11]. However, our patients did not have that complication.

In conclusion, subclavian and internal jugular accesses are standard approaches for port placement. Bilateral breast cancers, some of them locally advanced or metastatic are

quite common in our practice. For such patients with bilateral breast cancers, placement of port needs to be outside the potential surgical and radiation fields and femoral port is a good alternative. The vein is easily accessible in view of its placement medial to the palpable femoral artery. There is no reason to be apprehensive about infection at vein puncture site. Proper preparation of the operative area, care of the port and advice to the patient should ensure a good and durable femoral chemoport placement.

Conflict of Interest None.

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