A medial approach for open redo groin surgery for varicose vein recurrence

Safe and effective

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Varicose vein, recurrence, redo surgery, neo-vascularisation

Summary
Aims: To describe the technique of a medial approach for redo groin surgery for varicose vein recurrence and to report the one year prospective results for this procedure.

Method: The standardised technique employed is described. Prospective one year data regarding the effectiveness of this procedure was taken from a one year audit performed 2009–2010 at Skaraborg Hospital. Details regarding this patient cohort and the surgery performed were registered. The outcome was measured by using venous clinical severity score (VCSS) and the disease specific quality of life was measured with the Aberdeen varicose vein questionnaire (AVVQ). Venous duplex ultrasound scanning (DUS) was performed preoperatively, after 4–6 weeks and after one year.

Results: Out of 255 venous operations 34 regarded redo groin surgery and these were assessed. Females dominated 25/34 and the median age was 55 years (range 26–80). All patients had a probable stump according to DUS. CEAP C3-C4 dominated 28 patients/legs and C5-C6 in 4 legs. The median operating time was 69 minutes (range 35–120) and the operating time was significantly correlated to the number of incisions (p<0.001). The complication rate was 15 %, including 2 wound infections but no DVT or lymph leakage. Both the VCSS and the AVVQ scores were significantly improved after one year (p<0.001). After one year DUS detected recurrence in the groin was observed in 19 %, mostly neovascularisation.

Conclusion: Redo groin surgery by a standardised medial approach is a safe and not an especially technically demanding technique that can be performed reasonably rapidly. The one year results are promising and the early DUS recurrence rate seems low.

Schlüsselwörter
Varizen, Rezidiv, Rezidivoperation, Neovaskularisation

Zusammenfassung
Introduction

Redo surgery in the groin is considered to be a technically challenging and time-consuming operation with a substantial risk of complications. The main reason for performing redo groin surgery is inadequate primary surgery leaving a remaining intact SFJ, usually described as a stump (Fig. 1a).

Generally a direct approach by entering scar tissue should be avoided as much as possible because the risk of bleeding and lymphatic damage. Among vascular surgeons the lateral approach (1, 2), by first visualizing the femoral artery, has been a natural and common way of approaching the problem. Others prefer to first approach the common femoral vein from above the sapheno-femoral junction (SFJ) and to follow this vein down to the SFJ (3, 4).

A medial alternative indirect approach was suggested by Dodd & Cockett in their classical textbook (5). There are very few scientific reports regarding the effectiveness of these various procedures. However in one rather recent report the lateral approach seemed to be inherited with a high risk of especially lymphatic complications compared with the direct approach, but both resulted in high complication rates (6). Although the medial approach in one case series was reported to give good results (7) this technique seems not to have been widely adopted.

After having used the medial approach at our unit for more than fifteen years the effectiveness was tested in a one year audit of all venous surgery performed. The aims of this report are to describe the medial approach and to assess safety; patient satisfaction and the one year clinical result following medial approach redo groin surgery.

Method

Between September 2009 and August 2010 all venous surgery performed at our unit was audited in a pragmatic quality assurance study. Since this was an audit no formal ethical approval was required. Out of a total number of 255 operations 28% were redo procedures and 34 had redo groin surgery and these patients formed the basis for this report.

Assessments

All patients had a venous duplex ultrasound scan (DUS) prior to surgery performed by medical technology assistants who had been trained to detect stumps and neovascularisation. The ultrasound used was General Electric Logic 9 (GE, Milwaukee, WI, USA). Patients were assessed in a standing or semi-standing position. A rapidly inflating pneumatic cuff was used for calf compression and reflux was considered significant if exceeding 0.5 seconds. Venous pathology was recorded according to our validated venous protocol. The groin recurrence was classified according to Stonebridge (8). Neovascularisation was graded in two severity grades, grade 1 serpentine vessels with a diameter of <4mm and grade 2 a diameter of 4mm or more.

The severity of venous disease was graded according to CEAP and all patients were scored by the surgeon by using the venous clinical severity score (VCSS) and patients filled in the Aberdeen varicose vein questionnaire (AVVQ).

Most of the procedures were performed as day surgery cases and with general or spinal anaesthesia. Apart from groin redo surgery additional stripping of remaining great saphenous veins (GSV) and mini phlebectomies were performed. A few also had additional surgery to the short saphenous vein (SSV) or subfascial endoscopic perforator surgery (SEPS). A special protocol was used to register the patient, the CEAP clinical class, the surgery performed and the operating time.

Technique: medial approach

The basic principle and the major steps of the procedure are shown in figure 1b-c and the operation sequence figure 2. The ground principle of the medial approach is to avoid entering the scar tissue in the area of previous surgery around the stump. A medial approach is chosen because recurrence via an incompetent anterior accessory GSV is a common scenario with most of the incompetent veins located laterally.

The incision is usually made slightly S-formed in the right groin crease (Fig. 2a) or inverted S-formed in the left groin.

To avoid any medial veins one starts with a blunt dissection down through the subcutaneous fat in either of the “friendly triangles” shown in figure 1b. The dissection is done down to the fascia and is continued by blunt dissection, usually with your index finger, under any medially directed veins or lymphatic channels to the other triangle area (Fig. 2b). The bundle isolated is then ligated with a resorbable ligature and divided (Fig. 2c). This exposes the fascia and a retractor is used to hold the scar tissue to the lateral side. The fascia is followed laterally towards the opening of the fascia (the foramen ovale). By careful blunt and sharp dissection the femoral vein is exposed beneath the scar tissue (Fig. 2d). The fascia over the femoral vein distally to the SFJ is incised a few centimetres to expose the femoral vein (Fig. 1c). The stump is then gradually exposed and isolated after having dissected the femoral vein proximal to the SFJ. The next step is to go around the stump, which is preferably done by using blunt dissection in the mid plane of femoral vein laterally, to avoid severing any tributaries.

A Babcock clamp is used to pass a non-resorbable ligature around the stump ligating it distally to the SFJ (Fig. 2e). A curved vascular clamp is the placed on half of the circumference of the femoral vein, leaving the SFJ exposed to be divided precisely at the junction (Fig. 2f). The defect in the femoral vein is then sutured with a continuous vascular suture (5–0), preferably without causing narrowing or leaving a residual stump remnant (Fig. 2g).

Further dissection into the scar tissue is avoided but visible veins could be treated with diathermia, ligation or sclerosing foam if easily done. After haemostasis the subcutaneous tissue is closed in one or two layers with resorbable sutures. The fascia is not closed over the femoral vein, as have been suggested by others to minimize neovascularisation. Following this any additional procedures are done.

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Post operative care

A measured full length compression stocking was applied once the patient was ready to go home, which was kept during the first week. Thereafter patients were advised to use knee high compression stockings for at least 3 more weeks or longer according to patient preference.

Follow-up

All patients were offered a DUS after 4–6 weeks following surgery and after 12 months. At the 12 month visit for DUS VCSS was assessed by the medical technology assistant and patients once more filled in the AVVQ. At each visit any complications that had occurred were registered and patient records were checked.

Statistics

The VCSS and AVVQ scores pre-operatively and after one year were evaluated using the related samples Wilcoxon signed rank test. Correlation was assessed using Pearson correlation (2 tailed). A p value of <0.01 was considered statistically significant for the correlation assessment otherwise <0.05 was used. To show distributions of continuous variables, median values with ranges were generally used.

Results

The characteristics of the 34 patients/legs that underwent redo groin procedures and data regarding the surgery performed are shown in table 1. All but two patients were treated as day surgery cases. All had suspicion of saphenous stumps according to the preoperative DUS. The operations were performed by six different surgeons, although three experienced vascular surgeons did the great majority (88%). The total operating time was in median 69 minutes (Tab. 1). The longest operating times >100 minutes were caused by additional SSV surgery or SEPS (5 patients). The operating time was significantly correlated with the number of incisions, r=.563 p<0.001 (Fig. 3).
Complications

Five patients (15%) experienced complications; 2 experienced severe post-operative pains, 2 developed groin infections and 1 suffered a thrombophlebitis with haematoma. None required operative intervention and all complications resolved.

No DVT or lymphatic leakage was observed.

Follow-up duplex

After 4–6 weeks DUS of 31/34 patients/legs showed a good result without remaining groin incompetence for all but two. One seemed to have a short non-refluxing stump and one had a remaining incompetent deep tributary that was not found during surgery.

After one year DUS of 31/34 patients/legs showed groin incompetence in 6/31 legs (19%). Three had neovascularisation grade 1, two legs showed stumps with neovascularisation grade 2 and one had neovascularisation grade 2. None of the stumps had been visualised at the post-operative DUS and the stump noted previously (4–6 weeks) was after one year more like a bulge (<4 mm) with neovascularisation grade 1.

Clinical outcome

VCSS was scored for all 34 before surgery and available for 29 after one year. The VCSS score prior to surgery was 8 in median (range 3–19) and significantly reduced after one year to 3 (range 0–11) (p<0.001). Pain was the most commonly reported complaint prior to surgery (82%) and after one year this was significantly reduced to 20% (p<0.001).

AVVQ was answered by 32/34 patients pre-operatively and by 29 after one year. The median AVVQ score was significantly reduced from 26 (range 3–51) down to 13 (range 0–46) (p<0.001).

Discussion

There is very limited data regarding treatment of varicose vein recurrence although interventions to treat recurrence are not uncommon, probably in between 10–30% of all interventions performed at most large units (9–11). Surgery for groin recurrence have by tradition been considered as being technically difficult, time consuming high risk surgery that recently has been suggested to be totally abandoned by one opinion leader in the field of varicose vein recurrence (12).

As main reference a short retrospective report from the UK was referred to showing 40% complications following redo groin surgery (6). In that report a direct approach towards the SFJ was always attempted but when that failed an indirect lateral approach was undertaken. The ar-
tery was then exposed first to get to the femoral vein and to the SFJ from below.

Considering such an approach it is no wonder that the patients who first had a failed direct approach followed by a lateral showed more complications than the group where the primary direct approach was successful. The first group must have been more subjected to an extensive dissection within the scar tissue probably leading to more complications and an exceptionally high rate of lymphatic complications (26%) and wound infections (16%).

This high complication rate led the authors to change strategy to a superior approach, by first locating the femoral vein above the SFJ and then follow the vein down to the stump. How effective that was has not been published. It was similar difficulties that led me to change strategy more than a decade ago. The medial approach was suggested by Dodd & Cocket in a textbook already in 1976 (5) but few seem to have adopted this technique.

There is, however, one prior study describing the relative simplicity of the medical procedure but using a slightly different medial approach (7). The incision was done medially and slightly above the previous scar and the femoral vein was exposed above the stump that was then approached from above. They followed 31 patients for 14–44 months. At the last assessment reflux in the groin was assessed by hand held Doppler. They reported a low complication rate and found evidence of reflux in the groin in 16%, a similar figure as the 19% in this report.

However, since DUS was not available at that time the case mix was uncertain and whether all had stumps was not known, neither was the severity of venous disease among their patients. I have found no other reports in the literature regarding the medial approach although there are a few additional reports on lateral techniques combined with patching (13).

If you compare the complications, based on the limited literature (6, 7), the medial approach appears to be safer, which also these present results confirm. This standardised way of attacking the problem area is surprisingly simple and quick. These redo procedures only took some 20 minutes longer than a primary GSV surgery procedure, according to our audit data.

It was also performed by a number of surgeons and not just by one single expert, indicating a less technically demanding procedure. The one year DUS recurrence rate was rather low considered these were redo procedures and in line with what many randomised controlled trials comparing endovenous ablation and primary GSV surgery have shown.

That raises doubts about the quality of the open surgery performed in those trials. The rapidly spreading use of endovenous techniques may, if we are unlucky, lead to an increased demand for redo groin interventions, because these techniques very frequently leave stumps in the groin.

Surgery is to my knowledge the only technique that can remove a stump. Sclerosing foam and thermal endovenous techniques can at best treat remaining tributaries and some neovascularisation, but leave the stump intact. Although there is one short term report showing very good initial results from using foam (14), we have no idea of whether such treatments are durable or if the stump will continue to generate more neovascularisation and a repeated demand for retreatments.

If you can perform open redo surgery safely that is not technically demanding or especially time consuming, as shown in this report, this is likely to be a more durable alternative. A recently published truly long term prospective follow-up of varicose vein surgery from our institution also indicates reasonably good durability for redo procedures (11). The medial approach suggested in this paper is worth trying for dealing with symptomatic recurrence from remaining refluxing stumps in the groin.

A randomised study comparing the medial open surgical approach with sclerosing...
foam treatment of tributaries alone is much desired.

Conflict of Interest
The author declares no conflict of interest.

References