Aortoiliac Disease—Endovascular Treatment

For a detailed discussion of endovascular treatment of aortoiliac disease, see B 4.3.2, Aortoiliac PTA, p S83. Endovascular techniques such as PTA and stent placement have the advantage of lower morbidity and mortality risk compared with open surgical revascularisations. The death and complication rates of aortoiliac PTA and stent placement were analysed in a meta-analysis of 2,116 reported patients. Death within hospital stay (not 30-day mortality) averaged 0.14% for PTA and 0.3% for stent procedures. The 30-day mortality rate averaged 0.8% for PTA and 1.0% for stent procedures. For detailed discussion of complications of endovascular procedures, see B 4.3.7, p S109. The mean systemic complication rate was 1.3%; the local complication rate, 9.6%; and the mean rate of major complications necessitating treatment was 4.3% for PTA and 5.2% for stents, respectively.

Endovascular procedures are generally performed on patients with less severe disease than those undergoing surgical treatment. The risk for endovascular technique is much lower than for surgical treatment. However, PTA and stents offer a lower durability of the result as compared with bifurcated graft surgery. The adjusted 4-year primary patency rate for treatment of CLI, with technical failures included, was 53% after PTA and 67% after stent placement for the treatment of stenoses. Analysis of variables that could potentially affect the patency results shown some heterogeneity. However, disease severity (CLI vs claudication), lesion type (occlusion vs stenosis), and lesion site (common vs external iliac) were found to affect patency in some studies.

An analysis of the results of the endovascular treatment of aortoiliac disease has already been presented (see B 4.3.2, Aortoiliac PTA, p S83, and B 4.3.3, Aortoiliac Stents, p S86) and is not repeated here. This is because these procedures have been predominantly performed for claudication (proportion of patients undergoing procedures for claudication: 77% of PTA performed for iliac stenoses, 82% of iliac PTA for occlusions, 78% of iliac stenting for stenosis, and 86% of iliac stenting for occlusion). It should therefore be pointed out, in reviewing these data in comparison with the surgical bypass data presented earlier (see D 4.5.3, p S174), that the iliac PTA and stent data primarily reflect the treatment of unilateral (iliac) disease, with lesions amenable to these modalities.

References

Introduction to Preferred Therapeutic Options

The decision about what type of revascularisation to recommend ideally should be made by a multidisciplinary team. Important issues that may influence the recommended decision are:

- lesion morphology
- risk of surgery for that particular patient
- previous procedures (i.e., bypass or angioplasty)
- patient's life expectancy
- local expertise and experience with particular surgical or endovascular procedures

In general, endovascular procedures are safer and require shorter hospitalisation compared with surgical procedures. Durability of these endovascular procedures is, however, less well established. For most lesions, there is no direct evidence comparing the results of endovascular or surgical treatment in a controlled, prospective, randomised study.

The system used for preferred therapeutic options has been detailed (see B 4.3, Endovascular Procedures for Intermittent Claudication, p S82). Lesions are defined and then placed in four groups, each group usually being treated in a similar way. The two extremes are type A lesions, in which endovascular approach is the treatment of choice, and type D lesions, in which surgery is the treatment of choice. In between these two groups are types B and C lesions, in which no firm recommendations can be made about the preferred interventional option. However, endovascular treatment is more commonly used in
type B lesions and surgical treatment is more commonly used in type C lesions. There is insufficient solid evidence to make any firm recommendations, particularly in the case of types B and C. Most patients with CLI have multilevel disease, and it may be appropriate to use different techniques for different lesions.

D 4.7.1
Aortoiliac Disease—Preferred Therapeutic Options

The following and other similarly set out recommendations merely consider the probable relative merits of surgical and endovascular treatment, on the assumption that intervention is desirable. It is therefore identical to Recommendation 31 (p 583). The final choice of intervention, particularly for category 2 and 3 lesions, will of course depend on a number of other considerations, such as the patient’s overall health, the severity of the local lesion, etc.

Repeated from p S83
Recommendation 31: Morphological stratification of iliac lesions

TASC Type A iliac lesions:
1. Single stenosis <3 cm of the CIA or EIA (unilateral/bilateral)

TASC Type B iliac lesions:
2. Single stenosis 3–10 cm in length, not extending into the common femoral artery (CFA)
3. Total of two stenoses <5 cm long in the CIA and/or EIA and not extending into the CFA
4. Unilateral CIA occlusion

TASC Type C iliac lesions:
5. Bilateral 5–10-cm-long stenoses of the CIA and/or EIA, not extending into the CFA
6. Unilateral EIA occlusion not extending into the CFA
7. Unilateral EIA stenosis extending into the CFA
8. Bilateral CIA occlusion

TASC Type D iliac lesions:
9. Diffuse, multiple unilateral stenoses involving the CIA, EIA, and CFA (usually >10 cm)
10. Unilateral occlusion involving both the CIA and EIA
11. Bilateral EIA occlusions
12. Diffuse disease involving the aorta and both iliac arteries
13. Iliac stenoses in a patient with an abdominal aortic aneurysm or other lesion requiring aortic or iliac surgery

Abbreviations: CIA, common iliac artery; EIA, external iliac artery; CFA, common femoral artery.

Repeated from p S83
Recommendation 32: Treatment of choice for TASC type A and D aortoiliac lesions
Endovascular procedure is the treatment of choice for type A lesions and surgery is the procedure of choice for type D lesions.

Critical Issue 10: Treatment of TASC type B and C lesions

More evidence is needed to make any firm recommendations about the best treatment for TASC types B and C lesions.*

*CIRSE dissenting opinion:
Currently endovascular treatment is more commonly used for type B and C lesions, but more evidence is needed to make any firm recommendations about best treatment.

Reason for dissenting opinion: Due to technical developments, type C lesions of iliac and femoral arteries can be treated by endovascular means with a reasonable technical success rate (for references, see B 4.3). Therefore, CIRSE believes that in clinical practice these lesions are more commonly treated by endovascular techniques, although scientific evidence of any superiority over vascular surgery is lacking.

D 4.7.2
Combined Surgical and Endovascular Procedures

This discussion primarily concerns the choice between open surgical reconstruction and endovascular procedures and is directed toward proximal revascularisation. The common occurrence of multilevel disease in CLI patients has already been alluded to and discussed in terms of the need for concomitant distal bypass. However, combinations of endovascular and surgical procedures are increasingly being employed. Combined endovascular/surgical procedures have had some success in this regard. In considering the approach to a combined procedure, either concurrently in the operating room or sequentially in the angiography suite with early subsequent bypass, each lesion must be considered on its own merit. Iliac artery dilatation to improve inflow for a cross-femoral graft has been reported to be successful in carefully selected patients.12 Those patients with pressure gradients across aortoiliac stenoses should have these corrected before construction of a distal bypass graft.

For suitable lesions, balloon angioplasty, performed either intraoperatively or preoperatively, provides adequate inflow to maintain the distal reconstruction. The quality of the endovascular and surgical compo-
ments of the technique must not be compromised by skills and training of the individual performing either part of the procedure. Also, in the absence of sufficient length of ideal conduit for a distal bypass, balloon angioplasty may remove a discrete lesion distally, permitting longer-term patency of an otherwise compromised graft. The determination of combining or performing the procedures sequentially will be determined by local circumstances.

References


D 4.8
Infrainguinal Disease—Surgical Treatment

The main guiding principles behind surgical reconstruction are to bypass into the best available outflow vessel possible regardless of the anatomic level and to construct the bypass graft with autogenous vein. Further explanation and exceptions to these principles are discussed in the following sections. The issue of above-knee femoropopliteal bypass grafting has been addressed earlier (see B 4.4, Surgery for Intermittent Claudication, p 597). When a bypass graft is constructed to an outflow artery below the knee, autogenous tissue is accepted as the preferred conduit.

D 4.8.1
Inflow

Before reconstruction of infrainguinal PAD, the surgeon must ensure adequate inflow to the groin level or site of proximal anastomosis (see also Recommendation 88, p S178). The common femoral artery or an inflow graft is the usually accepted origin of a femoral distal bypass graft. A number of authors have reviewed experience with more distal take-off of bypass grafts (profunda, SFA, popliteal) and have found that in appropriately chosen individuals there is no compromise to the bypass. 1,2,3 For example, a stenosis of 20% or more in the native superficial femoral artery proximal to a graft origin has been correlated with eventual graft failure. 1 Because atherosclerosis is a generalised and in many cases progressive disease, distal origin bypass grafts should be undertaken only when inflow to that level is uncompromised. This issue is of some importance when alternative (and presumably shorter) segments of vein must be used for bypass grafts.

Recommendation 89: Inflow artery for femorodistal bypass
Any artery, regardless of level (ie, not only the common femoral artery), may serve as an inflow artery for a distal bypass provided that flow to that artery and the origin of the graft is uncompromised.

D 4.8.2
Outflow (Run-off) Arteries

The guiding principle here is to choose the distal outflow artery that allows the best perfusion of the foot. Any distal artery, including the pedal arteries, may serve as a suitable outflow tract with acceptable expected patency rates. 1,2,3 The results of femoro-below-knee popliteal grafting are similar to femoral distal bypass grafting. The choice of the site of the distal anastomosis should be based on the quality of the distal artery and its runoff and not the length of the bypass. The main exceptions to this relate to the lack of adequate length of suitable vein.

D 4.8.3
Distal Bypass Grafts

The same principles as outlined in the previous section on femoral-popliteal lesions apply to more distal bypass grafts. The increased length of the required conduit introduces some special problems in the absence of long saphenous vein, and these are discussed in the following sections. There should be no effort to compromise the length of bypass just to have the distal anastomosis in the popliteal artery rather than a distal artery. The best distal artery should be selected, because this will give the best long-term patency rates.

Recommendation 90: Femorofemoral distal bypass outflow vessel
In a femoral crural bypass, the least diseased distal artery with the best continuous run-off to the ankle/foot should be used for outflow regardless of location, provided there is adequate length of suitable vein.