In the era of routine usage of prostate-specific antigen (PSA) for the diagnosis and staging of prostate cancer, the validity of the clinical diagnosis of localized prostate cancer has improved. Large contemporary series of radical prostatectomy (RP) by any surgical method consist mostly of truly localized and node-negative cases; thus, due to the stage-shift following the widespread use of PSA testing, the incidence of positive nodes in patients undergoing RP has declined. Therefore, many groups prefer not to perform pelvic lymphadenectomy in patients with a low likelihood of harboring nodal metastases. However, there are also good arguments for routine pelvic lymphadenectomy.

5.1 Arguments for and Against Routine Pelvic Lymphadenectomy

Essentially, there are good arguments for and against routine pelvic lymphadenectomy in RP for localized prostate cancer in the era of routine PSA- and Gleason score-based staging. The main arguments for pelvic lymphadenectomy are that nodal disease may exist in a small proportion of cases despite adequate staging and that the diagnosis of pN-positivity will allow for better staging (with the view of adjuvant treatment) and may even have potential influence on outcome. The main arguments against routine lymphadenectomy are that it constitutes potential overtreatment in the majority of cases, that it contributes to the morbidity of the procedure (in addition to prolonging surgical time and hence costs), and that any substantial influence on outcome is unproven. These arguments should be examined in detail.

5.2 Morbidity of Pelvic Lymphadenectomy

The main argument against routine pelvic lymphadenectomy is that it considerably contributes to the morbidity of RP. The specific complication of bilateral pelvic lymphadenectomy is lymphocele formation. This risk is reported to amount to only 3–5% in series reporting the clinical frequency of this complication only [18]. The protagonists of routine extended lymphadenectomy claim that the frequency of pelvic lympho-
cele formation in their practice is low (2.7%) due to meticulous surgical technique, with ligation of all lymphatic vessels, double drainage, and injecting prophylactic low molecular weight heparin into the arm, not the thigh [16]; however, counting only lymphoceles which led to prolonged hospitalization or rehospitalization considerably underestimates the true risk of lymphocele formation [31]. This was shown in series reporting all lymphoceles of any size detected by routine use of imaging modalities in all patients [45, 46]. In these series the rate of pelvic lymphoceles of any size – irrespective of whether these were clinically apparent and/or required treatment – was 27–61%. Pelvic lymphoceles can cause further complications by compression and/or inflammation and are associated with an increased risk of deep venous thrombosis [33]. Clearly, lymphocele formation is more common than is apparent clinically and associated with a risk of serious complications. Whether any specific surgical technique – and most centers will certainly have meticulous techniques – reduces the risk of lymphoceles is completely unproven.

In a randomized study of 123 patients undergoing limited PLND on one side vs extended PLND on the other side, an overall complication rate of 10.6% was reported, with 75% of these occurring on the extended side [20]. In contrast, Heidenreich et al. reported no difference in complication rate in a comparison of two cohorts with either limited or extended bilateral PLND (9% in both groups) [32]. For laparoscopic PLND in 372 cases from 8 centers, Kavoussi et al. reported an overall complication rate of 15% for the early years of urological laparoscopy [36]. Although the overall complication rate of PLND seems to have declined similar to that of RP in general [4], undeniably, PLND adds potential morbidity to RP. It is therefore necessary to discuss whether routine PLND should be performed in all patients and to which extent this PLND should be performed.

5.3 **Extent of Pelvic Lymphadenectomy**

The added morbidity due to pelvic lymphadenectomy and the resulting increase in surgery time (and hence costs) have led to the widespread performance of routine pelvic lymphadenectomy only in patients with significant risk of harboring node metastases and/or of only performing a so-called limited pelvic lymphadenectomy of the obturator field only; however, the extent of lymphadenectomy in RP is not clearly defined. For the purposes of this discussion – and in accordance with the usage of most authors – three forms of lymphadenectomy in RP can be distinguished:

1. **PLND limited to the obturator fossa** (*limited or standard PLND*: between the external iliac vein, the obturator nerve and the branching off of the internal iliac artery).
   This is what many surgeons who routinely perform PLND will do for patients with low risk of node-positive disease.
2. **Modified PLND** (obturator fossa plus the lymphatic tissue around the internal iliac artery).
3. An **extended PLND** additionally including the area of the common iliac artery. While protagonists of the routine use of PLND and its potential benefit for outcome usually advocate the second form (modified PLND), the extended variety of PLND (including the common iliac artery) is only advocated by few and has been done for scientific purposes in some studies of RP [32, 48].