

Minimally invasive pelvic lymphadenectomy in radical prostatectomy – single surgeon technique evolution in multicenter setting

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Introduction

Pelvic lymphadenectomy (PL) is a part of radical prostatectomy in high (HR) and intermediate risk (IR) prostate cancer (PCa) patients (pts). Multiple surgical approaches are possible, but still its extent should be within the recommended limits.

Materials and methods

Surgeries with extended PL (ePL) were carried out in 3 centers from 1/2013 to 6/2019 by a single fellowship trained surgeon. ePL indications followed EAU guidelines for high and intermediate risk (initially all IR, later only those with calculated risk estimation > 5%). Only patients with ePL (“standard”/“extended”) were included (7 pts excluded due to missing data). Technique evolution resulted in 3 groups of patients based on approach: G1 - laparoscopic extraperitoneal (LE); G2 - laparoscopic transperitoneal (LT); G3 - robot-assisted transperitoneal (RAT). Complications related only to ePL are reported (i.e. no prostatectomy related are included).

Results

Overall, 108 pts underwent ePL: 44 in group 1, 26 in group 2 and 38 in group 3. Median age was 66 (IQR 62-69), 68 (IQR 61-71), 65 (IQR 60-69) years for G1, G2, G3, respectively (p = 0,49). Removed node numbers and percentages are in table 1.

Identified complications (with corresponding Clavien-Dindo (CD) classification) included:

Group 1: 4x lymphoceles requiring treatment (LRT) (CD 3a); 4x leg/genital lymphedema persisting > 6 months (LE6+) (CD 2); 1x deep vein thrombosis (DVT) (CD 2)

Group 2: no LRT; 2x LE6+ (CD 2); 2x lymphatic ascites (LA) resolved with conservative measures (CD 1); 1x DVT (CD 2)

Group 3: no LRT, 1x LE6+ (CD 2), no LA, no DVT

No major vascular or nerve injury occurred. Some patients in all groups reported lateral proximal thigh dysesthesia from cutaneous nerve branches affection. All symptomatic lymphoceles were treated by percutaneous drainage with povidone iodine sclerotherapy, no symptomatic recurrences occurred. Lymphedema was managed non-surgically in all cases with improvement over time. No case of pulmonary embolism was encountered in patients with DVT.

Table 1. Extended pelvic lymphadenectomy results for all patient groups. LE = laparoscopic extraperitoneal, LT = laparoscopic transperitoneal, RAT = robot- assisted transperitoneal; Q1 and Q3 = 1st and 3rd quartile of nodes removed. significance: * p = 0.15 for G2 vs. G1, # p < 0.01 for G3 vs. G1/G2

	median node count	Q1	Q3	minimum nodes removed	maximum nodes removed	number of patients with positive nodes / out of all per group	% of patients with positive nodes	median number of positive nodes	minimum positive nodes	maximum positive nodes
Group 1 (LE)	15	10	18	4	33	7 / 44	15,9%	1	1	2
Group 2 (LT)	18	14	23	6	45	4 / 26	15,4% *	3	1	7
Group 3 (RAT)	23	20	29	13	59	9 / 38	23,7% #	2	1	9

Conclusion

Minimally invasive ePL technique evolution resulted in improving number of LN removed and greater proportion of pts with positive LNs. It is likely a results of multiple confounding factors, among others: surgeon experience, technique evolution (more proximal medial margin and later retrovascular space approach), specimen handling, pathologist experience. Transperitoneal approach resulted in fewer complications (significance not calculated), namely minimum of clinically significant lymphoceles requiring treatment.