INTRODUCTION

Prostate cancer (PCa) is the most commonly observed solid organ malignancy affecting aging men worldwide. In recent years, the incidence of this disease in China has increased rapidly. According to statistics, more than 50% of patients with PCa in China have locally advanced or metastatic tumors at the time of diagnosis due to prostate-specific antigen (PSA) screening and geographical variables.

Radical prostatectomy plus extensive pelvic lymphadenectomy (RP + ePLND) is one of the standard treatments for patients with locally advanced PCa. Furthermore, multidisciplinary treatment, including androgen ablation, chemotherapy, and radiation therapy, has been given to these patients before or after RP. However, 35% to 50% of patients with locally advanced PCa experience biochemical recurrence (BCR) within 5 years after surgery. Approximately 25% of BCR patients develop recurrent lymph nodes (rLNs). The prognosis of patients with rLNs alone is better than that of those with bone or visceral organ metastasis. Salvage lymph node dissection (sLND) refers to surgery performed on the pelvic-retroperineal region due to potential LN metastasis and is more time-consuming and has a higher rate of complications than radiation therapy. Recently, Gallium prostate-specific membrane antigen (PSMA) ligand positron emission tomography (PET)computed tomography (CT) was used to identify rLNs, and 5 mg of ICG was injected into the space between the rectum and bladder before surgery. Fluorescent laparoscopy was used to perform sLND. While extensive LN dissection was performed at level I, another 5 mg of ICG was injected via the intravenous route to intensify the fluorescent signal, and laparoscopy was introduced to intensively target stained LNs along levels I and II, specifically around suspicious LNs, with Gallium PSMA ligand PET/CT. Next, both lateral peritonea were exposed longitudinally to facilitate the removal of fluorescently stained LNs at levels III and IV. In total, pathological analysis confirmed that 42 nodes were rLNs. Among 145 positive LNs stained with ICG, 24 suspicious LNs identified with Gallium PSMA ligand PET/CT were included. The sensitivity and specificity of Gallium PSMA ligand PET/CT for detecting rLNs were 42.9% and 96.6%, respectively. For ICG, the sensitivity was 92.8% and the specificity was 39.1%. At a median follow-up of 15 (interquartile range [IQR]: 6–31) months, 15 patients experienced complete biochemical remission (BR, prostate-specific antigen [PSA] <0.2 ng ml\(^{-1}\)), and 4 patients had a decline in the PSA level, but it remained >0.2 ng ml\(^{-1}\). Therefore, Gallium PSMA ligand PET/CT integrating ICG-guided sLND provides efficient sLND with few complications for patients with rLNs after RP.

To efficiently remove all recurrent lymph nodes (rLNs) and minimize complications, we developed a combination approach that consisted of Gallium prostate-specific membrane antigen (PSMA) ligand positron emission tomography (PET)/computed tomography (CT) and integrated indocyanine green (ICG)-guided salvage lymph node dissection (sLND) for rLNs after radical prostatectomy (RP). Nineteen patients were enrolled to receive such treatment. Gallium PSMA ligand PET/CT was used to identify rLNs, and 5 mg of ICG was injected into the space between the rectum and bladder before surgery. Fluorescent laparoscopy was used to perform sLND. While extensive LN dissection was performed at level I, another 5 mg of ICG was injected via the intravenous route to intensify the fluorescent signal, and laparoscopy was introduced to intensively target stained LNs along levels I and II, specifically around suspicious LNs, with Gallium PSMA ligand PET/CT. Next, both lateral peritonea were exposed longitudinally to facilitate the removal of fluorescently stained LNs at levels III and IV. In total, pathological analysis confirmed that 42 nodes were rLNs. Among 145 positive LNs stained with ICG, 24 suspicious LNs identified with Gallium PSMA ligand PET/CT were included. The sensitivity and specificity of Gallium PSMA ligand PET/CT for detecting rLNs were 42.9% and 96.6%, respectively. For ICG, the sensitivity was 92.8% and the specificity was 39.1%. At a median follow-up of 15 (interquartile range [IQR]: 6–31) months, 15 patients experienced complete biochemical remission (BR, prostate-specific antigen [PSA] <0.2 ng ml\(^{-1}\)), and 4 patients had a decline in the PSA level, but it remained >0.2 ng ml\(^{-1}\). Therefore, Gallium PSMA ligand PET/CT integrating ICG-guided sLND provides efficient sLND with few complications for patients with rLNs after RP.

Keywords: indocyanine green; prostate cancer; recurrent lymph node; salvage lymph node dissection

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PSMA ligand PET/CT test who accordingly underwent laparoscopic sLND via the ICG guidance approach and achieved 78.9% (15/19) PSA complete biochemical remission (BR) over a median follow-up time of 15 months and reduced the incidence of perioperative complications.

PATIENTS AND METHODS

Patients

Nineteen patients who experienced BCR and whose rLNs were identified by $^{68}$Ga-PSMA ligand PET/CT were enrolled to receive ICG-guided sLND in The Third Affiliated Hospital of Sun Yat-sen University, Guangzhou, China, between March 2017 and December 2019. During the initial RP period, $^{68}$Ga PSMA ligand PET/CT was not a routine preoperative examination; instead, bone emission computed tomography (ECT) combined with pelvic magnetic resonance imaging (MRI) was a more common preoperative combination for detecting the presence of tumor metastasis. Thirteen patients underwent RP + PLND surgery, and 6 patients had pathologically positive lymph nodes. A total of 192 lymph nodes were dissected during the RP + PLND surgery, of which 27 lymph nodes were confirmed to be pathologically positive. Fifteen of the 19 patients with postoperative BCR received androgen deprivation therapy (ADT; 78.9%). The clinical characteristics of these 19 patients at the time of RP surgery are described in Table 1. This study was approved by the Ethics Committee of The Third Affiliated Hospital of Sun Yat-sen University (batch number: Medical Ethics of the Third Affiliated Hospital of SYSU [2017]2-142), and all patients signed informed consent forms. Clinical evaluation included PSA, and $^{68}$Ga-PSMA ligand PET/CT examinations were introduced to determine rLNs without bone and visceral metastases. The following data were collected: clinicopathological characteristics, adjuvant ADT or radiotherapy (RT), site and number of positive nodes identified by imaging and at final pathology, perioperative blood loss (ml), operative time (min), and length of hospital stay (day). All patients were confirmed to have no allergy to iodine prior to surgery. Fluorescent laparoscopes used in the surgeries were produced by the Opmandi Company (OPTO-CAM2100) in Foshan, China. All 19 patients underwent ICG-guided sLND surgery within 1–2 weeks after $^{68}$Ga-PSMA ligand PET/CT examination. All surgeries were performed by the same senior surgeon (XG).

Imaging

Imaging examination was performed by the whole-body PET/CT imaging (GE Discovery Elite PET/CT, Boston, MA, USA), which has the characteristics of fast acquisition time and high resolution. It can quickly and accurately detect millimeter-level lesions and evaluate the therapeutic effect with ligand of $^{68}$Ga-PSMA (radiochemical purity 92%–98%; provided by Guangzhou Atom Hi-Tech Isotope Pharmaceutical Co., Ltd., Guangzhou, China). PET/CT imaging range is from the middle of the femur to the top of the head, 1 min and 40 s per bed. The CT acquisition conditions are as follows: the voltage of 120 kV, the electric current is automatically adjusted according to the machine’s software (70–220 mA), the scan thickness is 3.75 mm, reconstruction of the attenuation correction sequence and the standard soft tissue algorithm sequence. The VUE Point FX algorithm (GE Healthcare, Boston, MA, USA) is used for obtaining transverse, coronal, and sagittal tomographic images and maximum intensity projection (MIP) images. On the GE AW 4.6 workstation (GE Healthcare), the standard phase and diuretic delay phase PET/CT fusion images are used to delineate the region of interest (ROI) of the lymph node lesions.

Surgical technique

Preoperatively, $^{68}$Ga-PSMA ligand PET/CT was used to identify the positions of rLNs in the pelvis and retroperitoneum. Under ultrasound guidance, 5 mg of ICG (Dalian Bell Pharmaceutical Co., Ltd., Dalian, China) was injected into the space between the posterior wall of the bladder and the anterior wall of the rectum 60 min before the operation. Given that regular lymphatic drainage was altered after RP plus PLND, the repertoire of ICG-guided sLND started at level I. Five trocars were placed in the abdomen, and extensive LN dissection was carried out to cover the pelvic region, focusing on the inguinal and hypogastric arteries. After completing level I dissection, another 5 mg of ICG was injected via the intravenous route, and the laparoscope was switched to fluorescence mode to search for residual LNs at level I. Subsequently, the fluorescent LNs along the presacral and common iliac arteries were identified and removed, while fluorescently unstained LNs were not dissected at level II. Forceps were then used to retract the ascending or descending colon.

The lateral peritoneum was then exposed longitudinally to examine ICG-stained LNs along the abdominal aorta until the upper border of the renal vessel. At levels III and IV, only ICG-stained LNs were dissected; otherwise, LN dissection was not performed (Figure 1). The intraoperative fluorescent LN data were matched to the preoperative $^{68}$Ga-PSMA ligand PET/CT imaging data to confirm that the suspicious rLNs were included (Figure 2). All fluorescently stained (levels I, II, III, and IV) and unstained (level I) LNs were sent for pathologic analysis.

Follow-up

Perioperative complications were classified according to the Clavien–Dindo classification and recorded during the hospital stay.
All patients were followed up by outpatient clinic visits or telephone interviews at 1 month, 3 months, 6 months, 9 months, and 12 months after the operation. Patients were then followed up every 6 months for 1 year and then yearly thereafter. Follow-up visits included examinations for surgical complications, serum PSA levels, urinary control function, BCR, rLNs, and distant systemic metastases.

Statistical analyses
SPSS version 23 statistical software (IBM, Armonk, NY, USA) was used to process the data and for statistical analyses. Continuous data are presented as the median and interquartile range (IQR) and were compared with the Student's t-test. Categorical data are expressed as the number and percentage and were compared with the Chi-square test or Fisher's exact test, as appropriate. *P* < 0.05 was considered statistically significant.

RESULTS
The median age of the 19 patients was 71 (IQR: 65–76) years, the median PSA level at sLND was of 2.67 (IQR: 1.36–13.28) ng ml⁻¹, and the median Gleason score at previous RP was 8.2 (IQR: 7–10); the total number of suspicious LNs identified with ⁶⁸Ga-PSMA ligand PET/CT was 24. During the perioperative period, the median operation time was 108 (IQR: 75–143) min, and the median blood loss was 50 (IQR: 40–120) ml. The complication rate of sLND was 15.8%. The median follow-up time was 15 (IQR: 6–31) months. Fifteen patients had a complete BR (PSA <0.2 ng ml⁻¹). In the remaining 4 patients, the serum PSA level declined after surgery but remained >0.2 ng ml⁻¹. In accordant, those patients received ADT plus abiraterone (ABT).

During the follow-up, 2 cases had PSA response (<0.2 ng ml⁻¹) and another 2 presented a rising PSA and subsequently underwent ⁶⁸Ga-PSMA ligand PET/CT again. Above-mentioned examination found new metastasis site: 1 case at sacrococcygeal joint on the right, and the other case at 4th lumbar vertebra. Therefore, radiation therapy was performed. By update visit, PSA level of these two patients was <0.2 ng ml⁻¹ and ADT was discontinued. Detailed information on rLNs before, during, and after sLND is shown in Table 1. The sensitivity and specificity of ⁶⁸Ga-PSMA ligand PET/CT for identifying rLNs were 42.9% and 96.6%, respectively. The sensitivity and specificity of ICG fluorescence-targeted localization for detecting rLNs were 92.8% and 39.1%, respectively (Table 3).

DISCUSSION
Currently, sLND is the mainstay therapy in the setting of rLNs after RP and includes radiation and surgical management.¹⁵,¹⁶ sLND involves the pelvic and retroperitoneal regions, but ⁶⁸Ga-PSMA ligand PET/CT provides the potential for the early diagnosis of rLNs. Therefore, we aimed to efficiently remove rLNs and minimize complications using a combination approach integrating ⁶⁸Ga-PSMA ligand PET/CT with ICG-guided sLND. Our study indicated that patients with less than 3 PSMA ligand PET-positive spots experienced a good outcome after sLND, and ICG binding to rLNs produced high sensitivity but low specificity, while ⁶⁸Ga-PSMA ligand PET/CT produced low sensitivity but high specificity regarding rLNs; moreover, the detection rate of ⁶⁸Ga-PSMA ligand PET/CT depended on the level of PSA recurrence and size of rLN.¹⁷,¹⁸ This is in accordance with our results. In our study, the sensitivity of ICG fluorescence-targeted localization for detecting rLNs and the specificity of ⁶⁸Ga-PSMA ligand PET/CT for identifying rLNs were 92.8% and 96.6%, respectively (Table 3). In particular, Manny et al.¹¹ completed ICG-guided PLND in 50 patients and confirmed that of all fluorescently stained LNs, metastatic nodes were definitely detected, while negative nodes were not. Therefore, we incorporated the high sensitivity of ICG with the high specificity of ⁶⁸Ga-PSMA ligand PET/CT with respect to the identification of rLNs pre- and intraoperatively, and the initial results of this study demonstrated that our combination approach for sLND could increase the efficacy in both oncological and surgical outcomes. Over the median follow-up time of 15 months, among the 19 patients in this study, 15 (78.9%) achieved complete BR, while according to PET/CT- and MRI-directed extended salvage radiotherapy, 7/25 (28.0%) with rLNs achieved BR.²⁰ Meanwhile, the rate of early clinical recurrence (eCR) in our patients was 21.1%, similar to that in the robotic sLND cohort.²¹ According to the evaluated number of rLNs before and after surgery in this study, the median number of ⁶⁸Ga-PSMA-positive spots per patient before surgery was less than 3. Further, ICG-guided sLND revealed 145 fluorescently stained LNs, and 42 rLNs were identified by a pathologist, confirming all 19 patients with rLNs, including 3 with >3 rLNs. In addition, the median operative time of ICG versus open versus
Table 2: Data on lymph nodes identified and removed via indocyanine green-guided salvage lymph node dissection

| Level of the lymph node removed | Ga-PSMA ligand PET/CT (+), n | ICG (+), n | Pathological results (+), n |
|-------------------------------|-----------------------------|------------|-----------------------------|
| Level I                       | 15                          | 92         | 23                          |
| Level II                      | 6                           | 40         | 12                          |
| Level III                     | 3                           | 10         | 4                           |
| Level IV                      | 0                           | 3          | 3                           |
| Total lymph nodes removed     | 24                          | 145        | 42                          |

ICG: indocyanine green; Ga-PSMA: Gallium prostate-specific membrane antigen; PET: positron emission tomography; CT: computed tomography; rLNs: recurrent lymph nodes

Table 3: Sensitivity and specificity of 68Galium prostate-specific membrane antigen ligand positron emission tomography/computed tomography and fluorescent indocyanine green for the detection of recurrent lymph nodes

| Predictor                          | Pathological rLNs (+), n | Pathological rLNs (−), n | Detection capability (%) |
|------------------------------------|---------------------------|--------------------------|--------------------------|
| Ga-PSMA ligand PET/CT              |                           |                          |                          |
| Positive                           | 18                        | 6                        | Sensitivity (42.9)       |
| Negative                           | 24                        | 168                      | Specificity (96.6)       |
| ICG                               |                           |                          |                          |
| Positive                           | 39                        | 106                      | Sensitivity (92.8)       |
| Negative                           | 3                         | 68                       | Specificity (39.1)       |

ICG: indocyanine green; Ga-PSMA: Gallium prostate-specific membrane antigen; PET: positron emission tomography; CT: computed tomography; rLNs: recurrent lymph nodes

Regarding the surgical skill required for ICG-guided sLND, special dissection of the inguinal artery and adjacent to the hypogastric artery was performed with a harmonic scalpel. Subsequently, a laparoscopic probe was used to intensively examine the lateral sacral and common iliac artery rLNs and to specifically dissect fluorescently stained rLNs. Finally, the lateral peritoneum was exposed, and ICG-guided sLND at levels III and IV was performed according to the manipulation at level II. Based on our experience and literature reports, if tumor invasion is found in the bilateral seminal vesicles or adjacent to the rectum, rLNs at level II, level III, or possibly level IV might be present. ICG-guided laparoscopy should be used to examine these areas carefully during surgery. By combining intraoperative ICG fluorescence positivity with preoperative Ga-PSMA ligand PET/CT data, we found that sLND can be performed faster, more accurately, and with a shorter operation time.

In addition, it is necessary to select appropriate patients with rLNs for sLND. The European Association of Urology (EAU) prostate cancer guidelines revealed that the sLND management of rLNs has been studied by several retrospective analyses; however, the real efficacy of this salvage procedure and the impact on survival are still unknown. Our initial experience of sLND patient selection is based on whether the seminal vesicles were invaded and the internal iliac artery area was dissected at first RP surgery, and Ga-PSMA ligand PET/CT imaging revealed rLNs following BCR. If Ga-PSMA ligand PET/CT indicates rLNs and patients with long life expectancy, sLND may be considered. ICG-guided sLND will remove the micro-metastases LN that cannot be detected by imaging studies. Literature reports have shown that preoperative factors that significantly correlate with the prognosis of patients who undergo sLND are Ga-PSMA ligand PET/CT showing no extrapelvic rLNs and a preoperative PSA level <4 ng ml⁻¹. Postoperative predictive factors are a small number of positive rLNs after sLND, complete BR (PSA <0.2 ng ml⁻¹), and the exclusion of extrapelvic rLNs. In this study, the number of suspicious rLNs per patient was 1.26, the number of removed ICG-stained LNs per patient was 7.63, and the number of pathological LNs, including 7 extrapelvic rLNs, was 2.21 per patient, which were attributed to the success of the combined approach. Of the 4 patients who did not achieve BR, 3 had extrapelvic rLNs, and all of these patients received adjuvant therapy with a good response at the updated visit.

CONCLUSIONS

sLND, either by radiation or by minimally invasive surgery, is currently the major effective therapy for rLNs after RP. PET/CT- and MRI-directed sLND therapy for rLNs is a new updated strategy that can significantly delay PCa progression and potentially cure PCa recurrence. We integrated Ga-PSMA ligand PET/CT and ICG fluorescence-guided sLND in 19 patients with rLNs, and the initial results demonstrated that this combined approach is effective in treating BCR patients who develop rLNs, and unnecessary complications can be avoided. Of note, the combined approach is specifically applicable to patients with extrapelvic rLNs. The ICG injection route for sLND will be performed faster, more accurately, and with a shorter operation time.

AUTHOR CONTRIBUTIONS

TCL participated in the study design, surgery, acquisition of data, coordination and drafted the manuscript. YW participated in the surgery and follow-up. CTX, MZL, XPL, and WTH participated in the follow-up, and YL and KL performed the statistical analyses. XQW and JMD participated in the study design and data analysis. XG conceived the study, participated in the study design, and edited the final manuscript for publication. All authors read and approved the final manuscript.
COMPETING INTERESTS
All authors declare no competing interests.

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REFERENCES
1. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2019. CA Cancer J Clin 2019; 69: 7–33.
2. National Health Commission of the People’s Republic of China. Chinese guidelines for diagnosis and treatment of prostate cancer 2018 (English version). Chin J Cancer Res 2019; 31: 67–83.
3. Mottet N, van den Bergh RC, Briers E, Van den Broeck T, Cumberbatch MG, et al. EAU-EANM-ESTRO-SIIOG guidelines on prostate cancer-2020 update. Part 1: screening, diagnosis, and local treatment with curative intent. Eur Urol 2021; 79: 243–62.
4. Cornford P, Bellmunt J, Bolla M, Briers E, De Santis M, et al. EAU-ESTRO-SIOG guidelines on prostate cancer. Part II: treatment of relapsing, metastatic, and castration-resistant prostate cancer. Eur Urol 2017; 71: 630–42.
5. Pond GR, Sorparo G, de Wit R, Eisenberger MA, Tannock IF, et al. The prognostic importance of metastatic site in men with metastatic castration-resistant prostate cancer. Eur Urol 2014; 65: 3–6.
6. Löppenberg B, Daleia D, Karabon P, Sood A, Sammon JD, et al. The impact of local treatment on overall survival in patients with metastatic prostate cancer on diagnosis: a national cancer data base analysis. Eur Urol 2017; 72: 14–9.
7. Huang QX, Xiao CT, Chen Z, Lu MH, Pang J, et al. Combined analysis of CRMP4 methylation levels and CAPRA-S score predicts metastasis and outcomes in prostate cancer patients. Asian J Androl 2018; 20: 56–61.
8. Abdollah F, Briganti A, Montorsi F, Stenzl A, Stief C, et al. Contemporary role of salvage lymphadenectomy in patients with recurrence following radical prostatectomy. Eur Urol 2014; 30: 1–11.
9. Rosiello G, Bandini M, Briganti A. Salvage pelvic lymph node dissection for lymph node recurrent prostate cancer. Curr Opin Urol 2019; 29: 629–35.
10. Schmidt-Hegemann NS, Stief C, Kim TH, Eze C, Kirste S, et al. Outcome after PSMA PET/CT based salvage radiotherapy in patients with biochemical recurrence after radical prostatectomy: a bi-institutional retrospective analysis. J Nucl Med 2019; 60: 227–33.
11. Manny TB, Patel M, Hemal AK. Fluorescence-enhanced robotic radical prostatectomy using real-time lymphangiography and tissue marking with percutaneous injection of unconjugated indocyanine green: the initial clinical experience in 50 patients. Eur Urol 2014; 65: 1162–8.
12. Boscolo-Berto R, Siracusano S, Porzianato A, Polguy M, Percano AB, et al. The underestimated posterior lymphatic drainage of the prostate: an historical overview and preliminary anatomical study on cadaver. Prostate 2019; 80: 153–61.
13. Wang Y, Wen XQ, Li MZ, Huang QX, Li TC, et al. Comparative study of fluorescence vs high-definition laparoscopy in extended pelvic lymph node dissection plus radical prostatectomy for patients with locally advanced prostate cancer. Chin J Urol 2019; 40: 161–6.
14. Clavien PA, Sanabria JR, Strasberg SM. Proposed classification of complications of surgery with examples of utility in cholecystectomy. Surgery 1992; 111: 518–26.
15. Ploussard G, Gandaglia G, Borgmann H, de Visschere P, Heidegger I, et al. Salvage lymph node dissection for nodal recurrent prostate cancer: a systematic review. Eur Urol 2019; 76: 493–504.
16. Abreu A, Fay C, Park D, Quinn D, Dorff T, et al. Robotic salvage retroperitoneal and pelvic lymph node dissection for ‘node-only’ recurrent prostate cancer: technique and initial series. BJU Int 2017; 120: 401–8.
17. Emile SH, Elfeki H, Shalaby M, Sakr A, Sileri P, et al. Sensitivity and specificity of indocyanine green near-infrared fluorescence imaging in detection of metastatic lymph nodes in colorectal cancer: systematic review and meta-analysis. J Surg Oncol 2017; 116: 730–40.
18. Mandel P, Tirki D, Chun FK, Pristupa E, Graefen M, et al. Accuracy of ⁹⁹mTc-prostate-specific membrane antigen positron emission tomography for the detection of lymph node metastases before salvage lymphadenectomy. Eur Urol Focus 2020; 6: 71–3.
19. Rischke HC, Elieber AK, Volegov-Neher N, Henne K, Krauss T, et al. PET/CT and MRI directed extended salvage radiotherapy in recurrent prostate cancer with lymph node metastases. Adv Med Sci 2016; 61: 1–7.
20. Fossati N, Suaril N, Gandaglia G, Bravi CA, Soligo M, et al. Identifying the optimal candidate for salvage lymph node dissection for nodal recurrence of prostate cancer: results from a large, multi-institutional analysis. Eur Urol 2019; 75: 176–83.
21. Deves G, Muijlwijk T, Raskin Y, Calderon V, Moris L, et al. Comparison of peri-operative and early oncological outcomes of robot-assisted vs. open salvage lymph node dissection in recurrent prostate cancer. Front Oncol 2019; 9: 781–9.
22. Briganti A, Sauadi N, Capogrosso P, Passoni N, Freschi M, et al. Lymphatic spread of nodal metastases in high-risk prostate cancer: the ascending pathway from the pelvis to the retroperitoneum. Prostate 2011; 72: 186–92.
23. Liberale G, Bourgeois P, Larsson M, Donckier V, et al. Indocyanine green fluorescence-guided surgery after IV injection in metastatic colorectal cancer: a systematic review. Eur J Surg Oncol 2017; 43: 1656–67.
24. Ramirez-Backhaus M, Mira Moreno A, Gómez Ferrer A, Calatrava Fons A, Casanova J, et al. Indocyanine green guided pelvic lymph node dissection: an efficient technique to classify the lymph node status of patients with prostate cancer who underwent radical prostatectomy. J Urol 2016; 196: 1429–35.
25. Jeschke S, Lusuardi L, Myatt A, Hruby S, Pirich C, et al. Visualisation of the lymph node pathway in real time by laparoscopic radiosotope- and fluorescence-guided sentinel lymph node dissection in prostate cancer staging. Urology 2012; 80: 1080–6.
26. Fossati N, Willemse PM, Van den Broeck T, Van den Bergh RC, Yuan CY, et al. The benefits and harms of different extents of lymph node dissection during radical prostatectomy for prostate cancer: a systematic review. Eur Urol 2017; 72: 84–109.
27. Linxweiler J, Saar M, Al-Kallani Z, Janssen M, Ezzidin S, et al. Robotic salvage lymph node dissection for nodal-only recurrences after radical prostatectomy: perioperative and early oncological outcomes. Surg Oncol 2018; 27: 138–45.
28. Cornford P, van den Bergh RCN, Briers E, Van den Broeck T, Cumberbatch MG, et al. EAU-EANM-ESTRO-SIIOG guidelines on prostate cancer. Part II-2020 update: treatment of relapsing and metastatic prostate cancer. Eur Urol 2020; 79: 263–82.
29. Rischke HC, Schultz-Seemann W, Wieser G, Krönig M, Drendel V, et al. Indocyanine green fluorescence-guided sentinel lymph node dissection for nodal recurrence of prostate cancer: a systematic review and early oncological outcomes. J Urol 2016; 196: 1429–35.