Ileal Conduit as the Standard for Urinary Diversion After Radical Cystectomy for Bladder Cancer

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1. Introduction

Despite recent impressive achievements in radiochemotherapy-related approaches and molecular-based therapies, radical cystectomy (RC) remains the elective treatment for both muscle-invasive bladder cancer (MIBC) and selected non-MIBC cancers [1]. Countless retrospective studies unquestionably support RC’s excellent oncologic outcomes and satisfactory postoperative quality of life (QoL) at long-term follow-up. Although much of the clinical evidence coming from these studies is of low quality, major international guidelines strongly recommend RC as the elective treatment for MIBC [2].

Recent improvements in surgical techniques have contributed to favour the patient’s acceptance of this major surgery. Technical refinements concerning both expirative time, including sexual sparing procedures and reconstructive time with novel surgical solutions to divert...
urine, have consistently improved the patient's postoperative QoL. For >30 yr, the ileal conduit (IC) has been considered the "standard" urinary diversion method for most patients submitted to RC. It is recognised as the most clinically adequate, reliable, and cost-effective solution. In the mid-1980s, the IC was challenged by the introduction of both orthotopic bladder substitution (OBS) and cutaneous continent reservoir concepts [3]. During the last 20 yr, a variety of surgical OBS improvements have been introduced progressively into clinical practice and proposed more and more often to bladder cancer patients as the best compromise between oncologic radicality and postoperative QoL [4]. This surely advocates for reconsidering the role of IC; therefore, the real question is whether IC should still be considered the standard urinary diversion procedure following RC.

2. Ileal conduit in the contemporary era

The IC technique is based on the use of a short segment of ileal bowel to allow urine to traverse the abdominal wall and empty through a cutaneous stoma into a dedicated stoma collection device. The first description of the IC urinary diversion must be attributed to Seiffert [5] in 1935. However, the technique was subsequently refined and popularised by Bricker in the 1950s [6]. Further surgical variants, mainly concerning the ileo-ureteral implant, introduced by Wallace [7], Le Duc et al. [8], Saudin and Pettersson [9], and Taguchi (see Lee et al. [10]), did not substantially change the original technique, which remained the reference for urinary diversion against which all other types of post-RC surgical solutions have been compared and judged.

On the one hand, it has been stated that the major qualifying points of IC are represented by the relatively simple surgical technique and the low rate of inherent postoperative complications. On the other hand, a visible stoma, the need for lifelong stoma care, and the related limitations in terms of social relationships, lifestyle, and leisure activities are well-recognized disadvantages of this procedure [3]. Whether IC is actually an easy-to-perform intervention with overall limited postoperative complications remains a questionable issue. The overall long-term functional results are far from those expected from an ideal procedure [11], and the presence of a visible or malfunctioning stoma could be related to long-life anxiety and depression [12]. The fact is that dissemination of IC diversion and its acceptance in socially advanced countries remain disparate.

According to a recent report by the Urologic Diseases in America Project [13], among 27 494 patients submitted to RC between 2001 and 2005 from the Nationwide Inpatient Sample, 4539 (16.5%) underwent a continent urinary diversion and 22 955 (83.5%) underwent an IC. Interestingly, a significant trend towards the more liberal use of the IC during the last few years has been registered in some US contexts. The monoinstitutional report by Lowrance et al. [14] showed that OBS accounted for 47% of all urinary diversions in 2000 and for only 21% in 2005. Likewise, the recent study by Manoharan et al. [15] showed that of all patients (mean age: 69 yr) submitted to RC between 1992 and 2007 at a department of urology in Miami, Florida, 56% underwent IC and 41% underwent OBS. The trend is similar in many European contexts. The Swedish Bladder Cancer Register study was completed by including >90% of all patients with newly diagnosed bladder cancer treated with RC between 1997 and 2003, and IC and continent reconstruction were accomplished in 64% and 36% of cases, respectively [16]. Likewise, the German population-based study by Bader et al. [17] showed that IC was selected in up to 64% of overall cases after cystectomy. Similarly, a French national survey published in 2008 by the French Association of Urology confirmed the IC as the most frequent post-RC urinary diversion (84%) [18].

This scenario seems to contrast with that at some reference centres where, in the same period of time, a much higher percentage of patients underwent OBS (Ulm, 66%; Bern, 54%; Mansoura, 39% [19]). It clearly emerges that continent reconstructions are more often completed at academic departments than at county hospitals, demonstrating a substantial provider influence on the choice of post-RC surgical solution.

The report published in 2007 by the members of Consensus Conference on Bladder Cancer and the Société Internationale d’Urologie, including >7000 patients from 13 urologic departments [3], probably reflects the current distribution in the frequency of urinary diversions at reference centres. In this report, OBS accounted for 47% (30–66%) and IC accounted for 33% (22.6–64%). It is evident that the rate of patients submitted to any kind of diversion varies widely among high-volume institutions, and very little is known about the reason for this variation. The same study showed that surgical solutions different than IC and OBS are used only marginally in most urologic departments: anal diversion (10%), continent cutaneous diversion (8%), and incontinent cutaneous diversion (2%). When analyzing the mentioned studies, and regardless of the characteristics of the urologic centres, IC unquestionably remains the most frequent approach in female patients and in those >75 yr with less favourable TNM classification.

3. Patient preparation

A complete preoperative anaesthesiologic assessment including cardiac testing, renal and hepatic function, and correction of modifiable medical disease such as hypertension, cardiac arrhythmias, and anaemia should be completed in all patient candidates for RC.

During the last decade, enhanced recovery protocols with standardised perioperative plans of care or “fast-track” (FT) schedules have also emerged as tools to assist RC patients. Particularly, the FT protocols incorporate innovative aspects such as non-narcotic analgesics, limited bowel preparation, early institution of an oral diet, and drainage management and have been recognised by many clinical studies [20] as a promising approach in RC followed by the use of intestinal segments.
The use of bowel preparation using polyethylene glycol or sodium phosphate oral solution has been recommended and adopted for a long time in patients who are suitable for intestinal surgery to reduce the incidence of postoperative ileus, wound infections, and digestive anastomotic dehiscence [21]. However, when only the small bowel is being used, scant evidence supports bowel preparation. A simple cleaning enema the night before surgery as part of an FT regimen was documented to be a reliable and effective approach in patients who underwent IC diversion [22]. In IC patients, the urologist or stoma therapist should mark the site of the stoma, and the patient should test the appliance and wear the definitive urine collection device for 1 or 2 d before surgery. The stoma therapist may represent a key figure in the perioperative and postoperative management of these patients. Likewise, before surgery, patients should be fully informed about the risks and benefits of IC and surgical alternatives. Sufficient time should be given to patients to realize the impact of everyday aspects related to the urinary diversion selected before obtaining the informed consent. Often, before a final decision has been taken, counselling of the patient and the family is required, with the help of psychologists, oncology nurse specialists, or patients who have previously undergone the chosen procedure.

4. Indications and contraindications to ileal conduit

Since the introduction of continent urinary reservoirs into clinical practice, the paradigm for choosing a urinary diversion after RC has substantially changed. Currently, only one QoL study suggests that bladder substitutions score higher than IC [23]. To date, however, we should consider OBS as the first option for all RC patients and identify those for whom an orthotopic reconstruction might not be the ideal solution. In this way, rather than the standard, IC may be considered the most frequent alternative solution in all cases that are unsuitable for orthotopic substitutions. An absolute contraindication to continent urinary diversion of any type is compromised renal function due to long-standing obstruction or chronic renal failure, particularly when serum creatinine levels exceed 150–200 mol/l. Severe hepatic dysfunctions represent a well-known contraindication to OBS. Likewise, patients with compromised intestinal function should be oriented to an incontinent diversion. In addition, OBS is contraindicated in cases of anal sphincter mechanism deficiency or when urethrectomy is required. An impaired intellectual ability and the lack of manual dexterity may be considered as relative contraindications for bladder reconstruction because some patients may not be able to void with adequate use of abdominal straining, to manage programmed night-time awakenings, and to perform self-intermittent catheterisation when needed. History of pelvic irradiation, urethral stricture, neurologic disease, and willingness for regular follow-up are additional reasons for preferring an IC to OBS [24]; however, as recently shown in an overview by Froehner et al. [25], the IC is the urinary diversion of choice (>70%) in daily clinical practice for elderly patients (>70 yr). In the same setting and even more for patients >75 yr of age with severe comorbidities or with incurable disease requiring cystectomy mainly for symptom control, IC competes with cutaneous ureterostomy, decreasing both surgical trauma and complication rates.

Although OBS has been successfully performed in female patients [26], at present, IC remains the most frequent urinary diversion in females. Mean older age at time of bladder cancer diagnosis and high rates of both urinary incontinence and hypercontinence reported in some experiences, together with a relative increase of postoperative complications after OBS, play roles in preferring IC in the female population [3].

5. Surgical technique step by step and practical suggestions

RC with pelvic lymphadenectomy should be completed by respecting well-defined surgical steps, as summarized by Stein and Skinner [27] and by Bhojwani and Mellon [28].

5.1. Choice and preparation of the ileal segment

A segment of 12–18 cm of ileum proximally to the ileo-caecal valve is measured and generally tagged by sutures. Preserve intact at least 15 cm of terminal ileum to avoid metabolic disturbances related to salt absorption. Care must be taken to adapt the length of isolated ileal segment to the physical conformation of the patient (eg, longer for obese patients). Do not use a too short an ileal segment to avoid stretching and tension of the cutaneous stoma. Likewise, avoid the use of a redundant segment to prevent residual urine volume and urinary infections of both conduit and renal units. In patients who have undergone prior radiation, carefully select a segment of ileum unaffected by radiation.

The mesentery of the iliac segment selected is incised and prepared in a sequential manner using Kelly clamps and 3-0 free ties. Large feeding vessels must be avoided during this process to prevent vascular damage of both ileal segment and digestive anastomosis. Haemostatic surgery devices such as bipolar scissors, harmonic scalpels, or stapling devices may be of help, as may transillumination by using a satellite lamp at right angles to the bowel.

The mesentery needs to be delicately dissected near the tagged sutures to allow a GIA stapler or noncrushing clamps to be placed. The bowel segment is divided, and the end of the ileal segment that will be exteriorized is marked. Proximal and distal ends of ileum are then anastomosed. The digestive anastomosis may be completed by using staplers or by handmade standard sutures either side to side or end to end. Verify that the lumen of the completed intestinal anastomosis is sufficiently wide, avoid any traction on the suture, and prefer the peristaltic direction. Reinforce the staple lines with 3-0 sutures. Remember to
accurately close the mesentery window of the ileo-ileal anastomosis with 3-0 absorbable sutures to prevent an internal transmesentery ileal hernia (Fig. 1a).

Ultimately, the isolated ileal segment should be lying below the digestive anastomosis (Fig. 2). The distal closed end of the ileal segment is excised and opened to allow copious irrigation of its lumen with saline solution. The ileal loop is oriented to allow peristalsis to proceed in the antegrade direction towards the cutaneous stoma.

5.2. Preparation of the ureters

The isolation of the right ureter is distally limited, only rarely requiring an extended dissection of the caecum peritoneum or the mesentery root. The left ureter generally requires a more proximally extended isolation by dissecting the insertion of the sigmoid peritoneum. The left ureter is then transposed to the right side of the pelvis through a tunnel prepared at the base of the sigmoid mesentery in front of the common iliac vessels. Identifying the distal ends of the left ureter using a long tag suture may be of help to complete this passage (Fig. 3).

Extend the isolation of ureters, preferably along their lateral side, to preserve the vascular pedicles running medially. Avoid any traumatic handling of the distal ureteral tracts. Check that the retrosigmoidal tunnel is sufficiently wide enough and accurately prepared (digitally or by means of a gentle curved clamp), taking care not to damage the sigmoid vascular pedicle.

Verify that the left ureter, when brought in the right side, is not flaccid or stretched through the retrosigmoidal tunnel to avoid ischemic reactions or strictures at the ileo-ureteral anastomosis.

5.3. Ileo-ureteral anastomosis

After sending the ureteral stumps for a frozen-section histology (to exclude any residual tumour), the ureters are
anastomosed to the ileal segment. This step may be completed according to one of the different surgical proposed variants. In the original version, represented by the Nesbit ureteral implantation technique as adopted by Bricker ([6] (Fig. 4a and b), the proximal end of the conduit is left closed, and the ureteral ends are spatulated and anastomosed directly and separately with a refluxing technique along the antimesenteric side of the conduit. ([c-f]) Wallace variants: The ends of the ureters are widely spatulated, (c,d) conjoined together “head to head” (Wallace I) or (e,f) oriented in the opposite, “head to tail” direction (Wallace II), and then directly anastomosed to the proximal end of the ileal segment. (g,h) Le Duc et al antirefluxing anastomosis technique: The ends of ureters are spatulated, laid down on the ileal tracks, and secured to mucosal margins.

According to the Wallace [7] variant, the ends of the ureters are widely spatulated; conjoined together “head to head” (Wallace I; Fig. 4c and d) or oriented in the opposite, “head to tail” direction (Wallace II; Fig. 4e and f); and then directly anastomosed to the proximal end of the ileal segment. A running 4-0 Vicryl or Monocryl 4-0 suture is generally used to hold the ureters together and to connect them to the conduit. Le Duc et al. [8] proposed an antirefluxing anastomosis technique. In this variant, the proximal border of the IC is opened along the antimesenteric line for about 2–3 cm. The ureters are separately inserted into the ileal lumen and secured to the external side by several interrupted stitches. The ileal mucosa is distally incised for 1–2 cm starting from each ureteral entry. The ends of ureters are spatulated, laid down onto the ileal tracks, and secured to mucosal margins by using an interrupted 4-0 Vicryl suture (Fig. 4g and h).

The decision of which anastomosis technique to perform should consider the length (when similar on both sides, prefer Wallace; when disparate, such as in obese patients, prefer Bricker) and the diameter of ureter. Both Bricker and Wallace techniques are widely proven to be reliable and safe, providing acceptable rates of ureteral strictures [29]. When renal function is a concern, an antirefluxing anastomosis might be preferred. In the absence of special indications, use the most familiar technique. Take care to perform this step with a minimal touching technique.

Regardless of the kind of anastomosis performed, a feeding tube is passed into each ureter and drawn through the distal end of the conduit. The tubes should be secured to the ureters and the ileal mucosa using 3 or 4-0 absorbable sutures.

The size of the feeding tube should conform with the diameter of each ureter. Take care to distinguish the left from the right ureteral tubes to obtain a separate diuresis collection. The new generation of long-lasting single-J 90-cm stents can be used to avoid sutures. Check the integrity of the uretero-ileal anastomosis using some saline solution gently injected into the distal end of the conduit and repair any leakage intraoperatively.

5.4. Exteriorisation and accomplishment of the stoma

A circular skin excision in the previously marked stoma location is performed and an adequate crossed window is provided through the rectus fascia. The preferred location of the ileal stoma is the right abdominal quadrant between the umbilicus and the anterior-superior iliac spine. The muscle layers including rectus of abdomen are bluntly dissected, and the distal portion of the ileal loop is brought through the abdominal wall to the skin. The ileal end with a 2-cm nipple is secured to the rectus fascia with 3-0 Vicryl sutures placed at the 3, 6, 9, and 12 o’clock positions. The stoma is then completed by folding the distal margin of the conduit to obtain a 1-cm nipple by suturing the mucosa to the skin with multiple interrupted 4-0 Vicryl sutures. The ureteral stents are secured with a suture of 2-0 Vicryl to the skin, and an external ureine collection device is placed. A 20-French Foley catheter may be placed in the ileal loop for extra drainage.

Verify that the ileo-cutaneous anastomosis is tension free; otherwise, do not hesitate to redo it. Accurately define the location of the stoma: A location too close to the iliac spine or the umbilicus may expose to a frequent detachment of the stoma device and determine persistent urinary leakage. In left-handed patients or in case of previous surgical skin injury at the inferior abdominal right quadrant, the stoma can be located in a different position, taking care to avoid kinking or stretching of ureters and conduit.
Verify that the excision of both skin and fascia conforms to the wideness of the conduit. A narrow transfascial passage increases the risk of stomal stenosis and retraction; conversely, a wide passage favours prolapses and para-stomal hernias.

5.5. Closure

The bowel anastomosis must be reinspected by verifying adequate vascular supply and excluding enteric leakage. Likewise, the IC is revised and checked for tension and vascular supply. The uretero-ileal anastomosis is generally dropped back into the retroperitoneum, and the omentum, when available, is used to wrap the area. One drain is usually left near the area of the ureteral implant, and the other drains the pelvis.

Check that the mesenteric pedicle is not twisted. This can cause severe ischemic damage (Fig. 5). Secure the lateral peritoneum of the caecum to the lateral profile of the IC using few interrupted stitches to prevent an internal ileal hernia through the conduit and the peritoneum of the abdominal lateral wall (Fig. 1b). The irrigation of the abdominal cavity with antibiotic or normal saline solution is suggested.

5.6. Postoperative care

Mandatory surgical intensive care unit admission is probably no longer necessary when performing adequate recovery room observation, invasive blood pressure monitoring, and tailored fluid replacement. The nasogastric tube can usually be removed at the end of surgery or the day after. Postoperative artificial nutrition does not appear to affect the return of bowel function and is suggested only in selected cases. Data from fast-track regimens support the early administration of oral fluids (day 1) and, if successful, the early restoration of oral feeding. The abdominal drains are removed when they stop draining, whereas the ureteral stents are generally removed 8–12 d postoperatively. The role of the stoma therapist is recognized as essential for long-term stoma reliability. Patients should be educated about the most adequate kind of stoma to wear, how and when to replace it, and how to avoid complications related to incorrect handling of the cutaneous device.

6. Ileal conduit by laparoscopic and robotic assisted procedure

The IC may also be performed in the course of pure laparoscopic RC (LRC) or robot-assisted RC (RARC) following the same surgical steps described for open surgery. The rationale for both LRC and RARC with urinary diversion mainly relates to reduced corporeal trauma, perioperative complications, and hospital stay. However, these procedures were shown to be more time consuming and costly when compared to open surgery [30,31]. In addition, some concerns about oncologic outcomes and the need for a consistent learning curve have limited the dissemination of these techniques.

Risks and benefits of RARC have been confirmed recently in a review by Chade et al. [32] including 19 clinical experiences comparing LRC and RARC with open surgery. In these studies the extracorporeal reconstruction for IC was generally preferred to reduce the operative time. Growing evidence supports both feasibility and safety of intracorporeal diversions without increasing overall morbidity [33]. In addition, oncologic outcomes after RARC were recently shown to be similar to those after open surgery [34]. To date, however, the heterogeneous tumour characteristics and the lack of long-term follow-up preclude any definitive comparison analysis between different procedures. Randomized trials are advocated for this issue.

7. Complications

Complications related to RC with IC have been widely reported and have been described in up to 56% of cases [24]. Although technically simpler to perform compared to continent reservoirs, IC has not been associated with lower complications [3,11]. This can probably be related to the more unfavourable oncologic characteristics and higher comorbidities of the patients who undergo this procedure [35,36]. However, the Nationwide Inpatient Sample [13–37] report could not correlate the risk of postoperative complications after RC with the kind of surgical solution after RC.

When comparing different urinary diversions in the literature, it should be considered that reporting of short- and long-term complications after RC is not standardised, few series are prospective, patient selection is not uniform, and length of follow-up is often inconsistent. Complications related to the extirpative time (RC) are well described in review publications [38].
Some complications are strictly related to IC and have been distinguished between early (<90 d) and late (>90 d) [4] (Table 1).

7.1. Early complications

7.1.1. Related to the uretero-ileal anastomosis

Leakage of the uretero-ileal anastomosis is one of the most challenging adverse events, accounting for up to 7% of cases [24]. This complication is more frequently related to inadequate surgical technique, such as tension at the anastomosis, devascularisation and rotation of the ureters, or defective suture rather than to the kind of uretero-ileal anastomosis performed (ie, Bricker vs Wallace; Fig. 4) [38]. A conservative approach during the early postoperative period concerning nutrition, diversion, drainage, and treatment of any sepsis is generally sufficient. In the long term, leakage can determine fibrosis of the anastomosis, leading to upper urinary tract complications.

7.1.2. Bowel-related early complications

Paralytic ileus is described in up to 22% of cases and represents one of the most important determinants of the length of hospitalisation [38]. Type of preoperative bowel preparation, fasting prior to surgery, postoperative pain control, and inadequate surgical procedure are well-defined conditioning factors for ileus. Small bowel obstruction may be treated with nasogastric tube, intravenous fluids, and bowel rest; however, sometimes a surgical intervention can be required when an internal hernia is suspected or documented (Fig. 1).

Intestinal anastomosis leakage is a potentially catastrophic complication if not recognized early and accounts for an increase in the mortality rate [35]. A significant difference between stapled and hand-sewn ileostomy closures could not be found in literature [37]; however, this complication is frequently related to surgical errors.

7.2. Late complications

7.2.1. Uretero-ileal anastomotic strictures and deterioration of renal function

Benign strictures have been described in about 7–14% of cases and commonly occur during the first 2 yr after surgery [35]. Endoscopic and percutaneous management procedures are viable treatment options; however, an open surgical revision is often needed for a definitive treatment [39]. The type of uretero-ileal anastomosis (Bricker vs Wallace) does not affect stricture incidence [40,41]. Meticulous handling and preparation of the distal ureter are essential to minimise the risk of urine leak and postoperative strictures [42]. Tunnelling antireflux techniques are not useful [3] for IC reservoirs and have been described to carry a higher risk of stenosis in a randomised trial [43]. Clinical studies reporting long-term follow-up showed that up to 50% of patients submitted to uretero-intestinal refluxing anastomosis will develop upper urinary tract alterations, but only in 12% of cases do the renal changes become clinically significant [11].

7.2.2. Stomal, peristomal, and abdominal wall-related complications

These complications are extremely frequent (15–65%) [44,45] in IC patients and contribute significantly to reduce the overall QoL of the patients. The most frequent skin disorders are typically caused by chemical injury (irritant contact, dermatitis pseudoverrucous lesions, alkaline encrustation), mechanical injury (pressure ulcer, stripping injury, mucocutaneous separation), infection (candidiasis, folliculitis), and immunologic disorders (allergic contact dermatitis) [46]. The role of the stoma therapist in both prevention and management of these complications is essential.

Parastomal hernia, prolapse, stenosis, and retraction of the stoma have been reported in up to 31% of cases [44–46] and represent a frequent cause for reoperation after IC. Hernias may occur in the wound or adjacent to stomas and may require surgical revision, often without disrupting the whole conduit or reservoir. Parastomal hernia is an incisional hernia secondary to a fascial defect surrounding the conduit. It has been described as 10–15% of cases; however, the true rate of this complication remains undefined because most patients are asymptomatic or prefer not to treat the condition [46]. Contributing factors include obesity [47], malnutrition, chronic cough, and use of steroids. Although most parastomal hernias can be managed conservatively, approximately 30% of patients require surgical intervention due to obstruction, pain, and bleeding. The use of meshes to reinforce weakened fascial planes around stomas and relocation of the stoma to the contralateral side should be considered [48].

Stoma prolapse is relatively rare in IC (1.5–8% of cases) [49] and is substantially attributable to impaired vascularisation of the ileal segment combined with chronic infection. Nonsurgical management includes the use of a prolapse belt, although this carries the risk of stoma necrosis. Stoma stenosis is related quite exclusively to the use of ileum for cutaneous diversion. It has been described as 2.5–8.5% of cases at a median of 10 yr after surgery [50,51] and is associated with loss of peristalsis, thickening of the walls, and narrowing of the skin. Stenosis at the skin level can be managed by dilating the stoma; however, surgical revision may be necessary after the obstruction is relieved and sepsis is resolved.

| Table 1 – Frequently reported early and late complications following radical cystectomy and ileal conduit |
|-----------------|-----------------|
| **Early**       | **Late**        |
| Bowel related   | Stoma related   |
| Intestinal anastomosis related | Abdominal wall related |
| Ureteral-ileal anastomosis leakage | Uretero-enteric anastomosis stricture |
| Enteric fistula |                 |
| Bowel obstruction |                 |
| Prolonged ileus |                 |
| Conduit necrosis |                 |

| Early Late |
|------------|----------|
| Conduit necrosis | Metabolic changes |
| Metabolic changes | Abdominal wall related |
| Prolonged ileus | Conduit stenosis |
| Conduit stenosis | Stoma related |
| Bowel related | Abdominal wall related |
| Intestinal anastomosis related | Uretero-enteric anastomosis stricture |
| Ureteral-ileal anastomosis leakage | Conduit stenosis |
| Enteric fistula | Stoma related |
| Bowel obstruction | Abdominal wall related |
| Prolonged ileus | Conduit stenosis |
| Conduit necrosis | Metabolic changes |
7.3. Quality of life

The rationale behind the development of OBS is typically to provide a good overall QoL by restoring a voiding habitus close to the patient’s preoperative condition. Despite this assumption, the literature has failed to demonstrate potential superiority when comparing QoL of men who underwent RC with OBS and RC with IC [3]. Although most studies were retrospective and used diverse instruments to assess QoL, big differences were not shown in overall QoL, which was generally acceptable for most forms of urinary diversion [52]. Only one study reported better QoL with OBS compared to IC using a validated QLQ-C30 questionnaire [23]. The main flaws regarding QoL assessment are to be found in the actual definition of QoL itself, the diverse questionnaires adopted, and the differences in perception of QoL in different countries [53,54]. Careful patient selection and accurate preoperative discussion and counselling with the patient and relatives and the oncologic team (surgeon, oncologist, oncologic nurse, stoma therapist, and a psychologist) are the key steps to achieving adequate compliance that can reflect postoperative improvement of overall QoL, regardless of the urinary diversion chosen.

8. Conclusions

The IC can still be considered an appropriate surgical solution after RC in most patients because of the relative simplicity of the surgical technique, the acceptable complication rate, and the satisfactory postoperative QoL.

This urinary diversion remains widely advisable for elderly patients and for those with compromised renal function, with severe comorbidities, or who are unfit to manage continent reservoirs. The test of time has demonstrated that the long-term reliability of this procedure strictly depends on a rigorous surgical technique.

Conflicts of interest

The authors have nothing to disclose.

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