

Review

Systematic review and meta-analysis of non RCT's on health related quality of life after radical cystectomy using validated questionnaires: Better results with orthotopic neobladder versus ileal conduit



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Abstract

Purpose: The current literature on the impact of different urinary diversions on patients' health related quality of life (HR-QoL) showed a marginally better quality of life scores of orthotopic neobladder (ONB) compared to ileal conduit (IC). The aim of this study was to update the review of all relevant published studies on the comparison between ONB and IC.

Materials and methods: Studies were identified by searching multiple literature databases, including MEDLINE, CINAHL, the Cochrane Library, PubMed Data were synthesized using meta-analytic methods conformed to the PRISMA statement.

Results: The current meta-analysis was based on 18 papers that reported a HR-QoL comparison between IC and ONB using at least a validate questionnaire. Pooled effect sizes of combined QoL outcomes for IC versus ONB showed a slight, but not significant, better QoL in patients with ONB (Hedges' $g = 0.150$; $p = 0.066$). Patients with ileal ONB showed a significant better QoL than those with IC (Hedges' $g = 0.278$; $p = 0.000$); in case series with more than 65% males, ONB group showed a slight significant better QoL than IC (Hedges' $g = 0.190$; $p = 0.024$). Pooled effects sizes of all EORTC-QLQ-C30 aspects showed a significant better QoL in patients with ONB (Hedges' $g = 0.400$; $p = 0.0000$).

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Conclusions: This meta-analysis of not-randomized comparative studies on the impact of different types of urinary diversions on HR-QoL showed demonstrated a significant advantage of ileal ONB compared to IC in terms of HR-QoL.
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Keywords: Radical cystectomy; Urinary diversion; Ileal conduit; Orthotopic neobladder; Health related quality of life; Meta-analysis

Introduction

In the literature several surgical options of urinary diversion (UD) after RC have been described, from simply ureterostomy to orthotopic neobladder reconstruction. The ideal UD after RC should be easy to prepare and easy to handle, presenting few complications, low mortality and morbidity, protecting the upper urinary tract function as much as possible. Moreover it should be well accepted by the patient, thereby ensuring the best Health related quality of life (HR-QoL) as possible.

In the past years, there has been an increasing interest on quality of life outcomes in urological malignancies, developing new specific instruments with the aim to evaluate the HR-QoL of the urological patients and the impact of a health condition on their lives.

From the available published evidence^{1–3} is unclear if one form of transposed intestinal segment surgery is superior to another in terms of HR-QoL. Recently Ali et al. published a systematic review comparing orthotopic neobladder (ONB) to ileal conduit (IC) urinary diversion³; these authors concluded that ONB showed a marginally better quality of life scores compared to IC diversion especially when considering younger and fitter patients.³ The reason underlying the lack of significant differences between the different urinary diversions is multifaceted. One cause is the shortage of using validated tools to measure HR-QoL.

The aim of this study was to update the review of all relevant published studies on the comparison between ONB and IC using validated HR-QoL questionnaires.

Materials and methods

Literature search strategy

Studies were identified by searching multiple literature databases, including MEDLINE, CINAHL (Cumulative Index to Nursing and Allied Health Literature), the Cochrane Library, PubMed. References from articles retrieved were searched manually. The “related articles” function in PubMed was also used. These databases were analyzed from the earliest report of quality of life in patients with urinary diversion in 1980 to February 2015.

The following keywords were used in all searches: “quality of life”, “urinary diversion”, “ileal conduit”, “neobladder”, “orthotopic neobladder”, “orthotopic diversion”. In the absence of randomized clinical trials, queries were limited

to both retrospective and prospective comparative full text peer-review papers published in the English language, involving human subjects who underwent IC versus ONB.

The literature search was conducted independently by 2 investigators of the research team (MAC, CD). Data extraction was recorded on customized tables; in case of disagreements between the two independent authors, a third independent authors resolved the disagreement (WA). The data items extracted were: first author, country, journal, year of publication, study design (retrospective versus prospective), setting (single center versus multi-center) number of patients, percentage of female patients, age (years), follow-up (months), percentage of patients in \leq pT2 BC, percentage of ileal ONB (IONB) within the ONB group, type of validated HR-QoL questionnaire used. Within each domain, data were further categorized into specific outcomes according to the different HR-QoL instrument used.

Statistical analyses

Data were synthesized using meta-analytic methods.⁴ The standard mean difference, or the effect size between the ONB and the IC urinary diversion, was calculated using Hedges’ *g* unbiased approach. Calculation of the effect sizes was based on means, differences in mean scores, *p* value, and simple sizes of the groups. Data were statistically pooled by the standard meta-analysis approach, meaning that studies were weighted by the inverse of the sampling variance. A test of heterogeneity was applied and the I^2 statistic computed. The I^2 statistic indicates the proportion of total variation among the effect estimates attributed to heterogeneity rather than sampling error, and has the advantage to being intrinsically independent of the number of the studies. When the test of heterogeneity was not significant ($p > 0.05$) and I^2 was less than 30 per cent,^{5,6} a fixed-effects model was adopted for evaluation of the results; otherwise, a random-effects model was used. Several characteristics within the two analyzed patients’ groups (ONB and IC) were identified and their effects on outcomes were examined. Categorical characteristics were treated as moderators and effectiveness was compared across subgroups formed by these moderators. Continuous characteristics were examined as covariates using random-effects (method of moments) meta-regression. We also assessed publication bias using the Egger’s *t* test and funnel plots with significance values based on 1-tailed *p* values.^{5,6} Comprehensive Meta-Analysis V.2[®] software (BIOSTAT,

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