European Journal of Obstetrics & Gynecology and Reproductive Biology 208 (2017) 6–15

Contents lists available at ScienceDirect

European Journal of Obstetrics & Gynecology and Reproductive Biology

journal homepage: www.elsevier.com/locate/ejogrb

Review

Postoperative outcomes and quality of life following hysterectomy by natural orifice transluminal endoscopic surgery (NOTES) compared to laparoscopy in women with a non-prolapsed uterus and benign gynaecological disease: a systematic review and meta-analysis

Jan Baekelandt[a], Peter A. De Mulder[b], Ilse Le Roy[b], Chantal Mathieu[c], Annouschka Laenen[d], Paul Enzlin[e], Steven Weyers[f], Ben W.J. Mol[g], Jan J.A. Bosteels[a,h,*]

[a] Department of Obstetrics and Gynaecology, Imelda Hospital, Imeldalaan 9, 2820, Bonheiden, Belgium
[b] Department of Anaesthesiology, Imelda Hospital, Imeldalaan 9, 2820, Bonheiden, Belgium
[c] Clinical and Experimental Endocrinology, UZ Gasthuisberg, Herestraat 49—Box 902, 3000, Leuven, Belgium
[d] Leuven Biostatistics and Statistical Bioinformatics Centre (L-BioStat), Kapucijnenvoer 35 blok D—Box 7001, 3000, Leuven, Belgium
[e] Interfaculty Institute for Family and Sexuality Studies, Department of Neuroscience, KU Leuven, Kapucijnenvoer 7 blok G—Box 7001, 3000, Leuven, Belgium
[f] Universitaire Vrouwenkliniek, University Hospital Gent, De Pintelaan 185, 9000 Gent, Belgium
[g] The Robinson Institute, School of Paediatrics and Reproductive Health, The University of Adelaide, 55 King William St., North Adelaide, SA 5006, Australia
[h] CEBAM, The Centre for Evidence-based Medicine, Cochrane Belgium, Academic Centre for General Practice, Kapucijnenvoer 33 blok J—Box 7001, 3000, Leuven, Belgium

ARTICLE INFO

Article history:
Received 22 August 2016
Received in revised form 27 August 2016
Accepted 21 October 2016
Available online xxx

Keywords:
NOTES
Laparoscopy assisted hysterectomy
Laparoscopic hysterectomy
Randomised controlled trials
Comparative studies

ABSTRACT

Objective: To critically appraise studies comparing benefits and harms in women with benign disease without prolapse undergoing hysterectomy by natural orifice transluminal endoscopic surgery (NOTES) versus laparoscopy.

Study design: We followed the PRISMA guidelines. We searched MEDLINE, EMBASE and CENTRAL for randomised controlled trials (RCTs), controlled clinical trials (CCTs) and cohort studies comparing NOTES with laparoscopy assisted vaginal hysterectomy (LAVH) or total laparoscopic hysterectomy (TLH) in women bound to undergo removal of a non-prolapsed uterus for benign disease. Two authors searched and selected studies, extracted data and assessed the risk of bias independently. Any disagreement was resolved by discussion or arbitration.

Results: We did not find RCTs but retrieved two retrospective cohort studies comparing NOTES with LAVH. The study quality as assessed by the Newcastle–Ottawa scale was acceptable. Both studies reported no conversions. The operative time in women treated by NOTES was shorter compared to LAVH: the mean difference (MD) was −22.04 min (95% CI −28.00 min to −16.08 min; 342 women; 2 studies). There were no differences for complications in women treated by NOTES compared to LAVH: the risk ratio (RR) was 0.57 (95% CI 0.17–1.91; 342 women; 2 studies). The length of stay was shorter in women treated by NOTES versus LAVH: the MD was −0.42 days (95% CI −0.59 days to −0.25 days; 342 women; 2 studies). There were no differences for the median VAS scores at 12 h between women treated by NOTES (median 2, range 0–6) or by LAVH (median 2, range 0–6) (48 women, 1 study). There were no differences in the median additional analgesic dose request in women treated by NOTES (median 0, range 0–6) or by LAVH (median 1, range 0–5) (48 women, 1 study). The hospital charges for treatment by NOTES were higher compared to LAVH: the mean difference was 137.00 € (95% CI 88.95–185.05 €; 294 women; 1 study).

Conclusions: At the present NOTES should be considered as a technique under evaluation for use in gynaecological surgery. RCTs are needed to demonstrate its effectiveness.

* Corresponding author at: CEBAM, The Centre for Evidence-based Medicine, Cochrane Belgium, Academic Centre for General Practice, Kapucijnenvoer 33 blok J—Box 7001, 3000, Leuven, Belgium.
E-mail address: jan.bosteels@med.kuleuven.be (J.J.A. Bosteels).

http://dx.doi.org/10.1016/j.ejogrb.2016.10.044
0301-2115/

Contents

Introduction

Rationale

Natural orifice transluminal endoscopic surgery (NOTES) uses the natural orifices of the human body as an access route to the abdominal cavity for perfo`rming surgery. Its first application was described in 2004 in the porcine model by researchers at the Johns Hopkins University [3]. The feasibility of NOTES by gastroscopy has been demonstrated for performing appendectomy [4] or cholecystectomy [5]. Reported advantages include less postoperative pain, a shorter length of hospital stay, less complications and improved cosmetic results [6]. The majority of NOTES procedures in women have been done by using the vagina as the access route [7]. Colpotomy has been used widely for surgical procedures involving extraction of large specimens: it has been reported as a safe access [8,9]. Hysterectomy using a transvaginal NOTES approach was first described in the human by Su et al. in 2012 [10]. Our group published on our own experience with transvaginal NOTES for doing hysterectomy in 2015 [11].

Objectives

To assess the efficacy/effectiveness and safety of NOTES for hysterectomy in women with a non-prolapsed uterus and benign gynaecological disease compared to the conventional laparoscopic technique.

We aim to answer the following questions:

1. Is NOTES equally effective compared to the laparoscopic approach for successfully removing the uterus without the need for conversion?
2. Is the removal of the uterus by NOTES faster compared to laparoscopy?
3. Does NOTES cause more complications, e.g. infection or other surgical adverse events compared to laparoscopy?
4. What is the length of hospital stay in women treated by NOTES compared to laparoscopy?
5. What is the rate of hospital readmission after discharge in women treated by NOTES versus laparoscopy?
6. Do women treated by NOTES suffer less pain compared to women treated by laparoscopy in the postoperative period?