CHAPTER 5

INTRODUCTION OF NOTES IN THE NETHERLANDS, CHOLECYSTECTOMY WITHOUT VISIBLE SCARS: THE TRANSVAGINAL METHOD

P.B. van den Boezem, Ph.M. Kruyt, M.W.J. Stommel, R.A.K. Samlal, C. Sietses

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ABSTRACT

The laparoscopic cholecystectomy is the standard procedure for symptomatic gallstones disease. NOTES (Natural Orifice Transluminal Endoscopic Surgery) is the logical next step in the development towards minimal invasive surgery. During a NOTES procedure, a natural orifice, like the vagina, is used to gain access to the peritoneal cavity instead of incisions through the abdomen.

In this article we report the introduction of the NOTES technique in the Netherlands.

Recently 15 women were treated at our institution with a transvaginal cholecystectomy. The performed procedure was a hybrid NOTES cholecystectomy. Only one trocar was inserted through the umbilicus, the other instruments were inserted through the vagina.

Potential advantages of this technique includes a better cosmetic result and less postoperative pain. In the near future, this technique should be investigated in a randomized controlled trial.
WHICH TECHNIQUE?

Traditional open abdominal surgery has been replaced by laparoscopic procedures in many cases as first choice treatment. Technical developments have been fast over the past years as recently described by Voermans et al.

One of the most recent developments has been the introduction of NOTES (Natural Orifice Transluminal Endoscopic Surgery). In this technique, a natural orifice is used to gain access to the peritoneal cavity instead of incisions through the abdominal wall. Kalloo was the first to describe a NOTES procedure in 2004. In an experimental animal lab he performed a procedure trans-gastrically. Natural orifices that can be used for a NOTES procedure are stomach, vagina and rectum. NOTES procedures can be performed without any visible scars and are therefore an increasingly popular topic among surgeons, gastro-enterologists, patients and media.

Our hospital has recently started to perform the hybrid NOTES transvaginal cholecystectomy. After sterile exposition of the abdomen and the vaginal region, a 5 mm incision is made in the umbilicus. After insertion of a Veress needle, pneumoperitoneum is established by insufflation of carbon dioxide gas. The Veress needle is then replaced by a 5 mm trocar with a 5 mm optic. With the patient in Trendelenburg and under direct vision, the vaginal trocar and a forceps are inserted through a small incision in the fornix posterior. The patient is then placed in anti-Trendelenburg position and the camera is changed to a 10 mm optic that is inserted through the vaginal trocar. The fundus of the gallbladder is now fixated to the ventral abdominal wall with a percutaneous suture. The forceps is used to grab the gallbladder at the infundibulum and gives the opportunity to swing the gallbladder to the right and the left in order to reach critical view of safety during dissection. The triangle of Calot is dissected through the umbilical trocar. After critical view of safety has been reached, both ductus and arteria cystica are clipped with non-absorbable hemo-lock clips and subsequently divided. The gallbladder is removed through the vagina with the use of a disposable removal bag. Finally, the defect in the fornix posterior is closed with absorbable sutures.

The aforementioned technique is a hybrid procedure. To establish a pneumoperitoneum in a safe manner and insert the vaginal trocar under direct vision, it is still necessary to start with one trocar at the umbilicus. However, this incision is placed deep in the umbilicus and is, in most patients, not visible after surgery. All patients are seen pre- and postoperative by a gynecologist at the outpatient clinic. During our introduction period, a pre-operative vaginal ultrasound is performed to detect abnormalities that could impair a safe introduction of the vaginal trocar. For example, endometriosis can cause severe adhesions in the small pelvis that prevent a safe introduction of the vaginal trocar. Post operative the fornix posterior is inspected. All patients are advised to refrain from sexual intercourse for a period of 4 to 6 weeks.

DO WE NEED A NEW TECHNIQUE?

Patients have considerable benefits from laparoscopic surgery regarding postoperative recovery, pain and cosmesis. However, with the current laparoscopic techniques it remains
necessary to make incisions through the abdominal wall and thus creating visible scars over the abdomen. During a hybrid NOTES procedure access to the peritoneal cavity is gained through a natural orifice, with only one extra 5 mm incision through the abdominal wall. Recently several other techniques have been introduced, like the single-port cholecystectomy. With this technique it still remains necessary to make an incision of 3 cm at the umbilicus.

WHICH INDICATIONS?
The transvaginal cholecystectomy is a treatment option for all women with symptomatic gallstone disease.

WHAT ARE THE BENEFITS?
With the current laparoscopic procedures incisions are made through the abdominal wall. Besides the cosmetic advantage, this technique could result in less wound infections and hernias. Another advantage of the use of a natural orifice could be less postoperative pain and thus a faster recovery. In comparison with a single port cholecystectomy the NOTES technique is technically less challenging. This is due to the fact that there is no limitation in freedom of motion as observed during single-port abdominal surgery.

WHAT IS KNOWN IN LITERATURE?
Analysis of the first 550 NOTES procedures in Germany showed a safe introduction of this technique without an increase in complication rates\(^3\). Zornig et al. matched 100 hybrid transvaginal NOTES cholecystectomies with a regular laparoscopic cholecystectomy\(^4\). There was no difference in length of hospital stay and complications, bile duct lesions were not seen in the NOTES group. NOTES operative times were significant longer. Advantages of a NOTES procedure were a better cosmetic result and less wound infections. There was no dyspareunie observed. At this moment we have performed 15 procedures in our clinic, all without complications.

HOW DIFFICULT IS THIS TECHNIQUE?
The main difference between a normal laparoscopic cholecystectomy and a NOTES cholecystectomy is the insertion of the trocars. During dissection of the gallbladder the same technique is used with instruments that are also used during a normal laparoscopic cholecystectomy. During the transvaginal technique one trocar is inserted through the umbilicus and one trocar in the fornix posterior. Introduction of the vaginal trocar and closure of the defect in the fornix posterior was assisted by a gynecologist. We observed that the learning curve is mainly determined by the incision and closure of the fornix posterior and is estimated around 10 to 15 procedures. Because the dissection of the gallbladder is comparable to a normal laparoscopic cholecystectomy and there is no limitation in freedom of motion, we didn’t encounter difficulties in reaching critical view of safety.
FUTURE PERSPECTIVES

Introduction of NOTES in the Netherlands is slow. In several other countries in western Europe, this procedure is performed on a more regularly basis. We expect that in the near future an increasing number of hospitals will offer this kind of treatment. The NOTES principle will also be introduced for other types of abdominal surgery, such as appendicitis and bowel surgery.

WHERE IN THE NETHERLANDS?

Hospital Gelderse Vallei, Ede, is currently the only hospital in the Netherlands where the hybrid transvaginal cholecystectomy is performed. This treatment modality is offered to all female patients with uncomplicated, symptomatic gallstone disease.
REFERENCES


