

# Transvaginal NOTES cholecystectomy in my partner? No way!

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Videosurgery and Other Miniinvasive Techniques 2011; 6 (4): 236-241

DOI: 10.5114/wiitm.2011.26258

## Abstract

**Introduction:** Natural orifice transluminal endoscopic surgery (NOTES) transvaginal cholecystectomy is being intensively studied. A few studies have been recently published evaluating patients' attitude towards NOTES with its individual accesses. However, the choice of a transvaginal access with its potential influence on sex life and fertility is not restricted entirely to women. The sexual partner would at least give his opinion or decide together with the woman.

**Aim:** The aim of the study was to assess the attitude of male sexual partners of potential NOTES transvaginal patients towards the surgical access.

**Material and methods:** Hundred males were asked for their opinion in a specially designed instrument.

**Results:** The general attitude of male sexual partners of potential NOTES transvaginal cholecystectomy patients is negative. With several possible problems and complications feared by the partners, they would mostly oppose or dissuade against NOTES transvaginal cholecystectomy. The cosmetic benefit seems not to justify undergoing a novelty procedure with potential complications threatening sexual life and procreation. This attitude was especially observed in young, sexually active males with high appreciation of sexual life.

**Conclusions:** Both scientific and educational efforts are required to prove safety and efficiency of NOTES transvaginal cholecystectomy beyond question.

**Key words:** natural orifice transluminal endoscopic surgery, transvaginal cholecystectomy, sexual life, surgical access.

## Introduction

Natural orifice transluminal endoscopic surgery (NOTES) technology is developing rapidly and the first human series were published after the confirmation of feasibility and safety of the method in animal models [1]. The most intensively studied approach is the transvaginal access and the most popular procedure performed via this access is cholecystectomy [2, 3]. Although still an experiment, the transvaginal NOTES cholecystectomy may be widely offered to the female population virtually any time now. A few studies have been recently published evaluating patients' attitude towards NOTES with its individual accesses [4-6]. While transgastric access was not well perceived, the trans-

vaginal access was accepted by the patients with variable enthusiasm [6]. Women declared they would undergo a potential transvaginal cholecystectomy in a variable percentage reaching from 15% in a Polish population up to 68% in a Californian population. Although several issues concerning potential risks and disadvantages were raised, these data support the efforts of the industry and health care professionals in providing safe and efficient transvaginal cholecystectomy. Among the most frequent concerns were the sexual life and fertility issues related to the vaginal manipulation [5]. Women regardless of their attitude towards transvaginal NOTES cholecystectomy were concerned about the above-mentioned reproductive problems in

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81% and 61% respectively. These concerns were more frequent in nulliparous and younger women [5].

Healthy sex life and fertility are extremely important components of quality of life and general well-being [7, 8]. These issues far exceed the physical satisfaction and procreation plans. The potential consequences of sex life problems or fertility problems not only can impair the psychosocial functioning of an individual, but also strongly influence the sexual partner and the emotional aspect of the relationship [7]. This is why the choice of a transvaginal access for removing a distant and unrelated organ such as the gall bladder with its potential influence on sex life and fertility is not restricted entirely to women. The sexual partner would at least give his opinion or decide together with the woman. The influence of the partner's opinion on such a delicate issue cannot be underestimated.

## Aim

The aim of the study was to assess the attitude of male sexual partners of potential NOTES transvaginal patients towards the surgical access.

## Material and methods

Hundred males aged between 24 and 71 years (average 47 years) were asked for their opinion in a specially designed instrument (Appendix). The first part was a brief description of transvaginal NOTES cholecystectomy. The second part was a questionnaire assessing opinions on different aspects of the procedure with special attention to sexual and fertility issues. The individual items were pre-validated in a pilot study (15 respondents). The study subjects were offered to participate in an anonymous opinion study without any gratification. To provide maximal privacy due to the intimate nature of questions, male staff was designated for this purpose and completed questionnaires were placed by the subjects in a ballot box (not handed directly to the staff). The obtained results were digitalized and analysed with Statistica PL package. *T*-tests were used for parametric data.

## Results

### Respondent data

Eighty-three percent of the respondents were in a relationship (69% married and 14% in another per-

manent relationship). Importance of sexual life in respondents' life was scored on average as 7.66 (scale 1-10). Average sexual attractiveness of the partner was scored as 6.53 (scale 1-10). Frequency of sexual intercourse was scored as too low by 33% of the respondents, sufficient by 64%, too high by 3%. Satisfaction from sexual life was scored on average as 7.31 (scale 1-10). The accepted period of sexual abstinence after transvaginal surgery was on average 3.47 weeks (range 1 day-21 weeks).

### Partner data

Abdominal scars were considered as a cosmetic defect by only 12% of the respondents, while for 7% scars decrease the sexual attractiveness of the partner. Presumed satisfaction from sexual life of the partner was scored on average as 8.11 (range 1-10).

### Factors that can impair sexual and reproductive functions

Transvaginal gynaecological surgery was the most frequently indicated factor that can impair sexual and reproductive functions. High scores were also noted for hygienic issues and age. Labour was indicated by one third of the respondents. Detailed percentages are given in Table I.

### Fears related to transvaginal NOTES surgery

All the potential access site specific problems related to the NOTES transvaginal surgery were perceived by the respondents in high frequencies. Decreased sexual satisfaction of the partner (47%),

**Table I.** Factors that can impair sexual and reproductive functions (perceived by respondents)

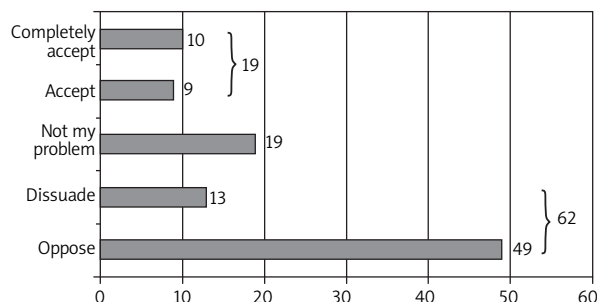
Factor	Percent
Gynaecological surgery – transvaginal	77
Gynaecological surgery – transabdominal	12
Labour	33
Age	53
Frequency of intercourse	19
Number of partners	5
Hygienic issues	69

**Table II.** Fears related to transvaginal NOTES cholecystectomy

Fear	Percent
Pain	26
Infection	39
Postoperative hernia	9
Fertility problems	34
Decreased sexual satisfaction – respondent	33
Decreased sexual satisfaction – partner	47
Other disorders of genitals	23
Urinary disorders	17
Defecation disorders	6
Gastrointestinal disorders	5

**Table III.** Perception of transvaginal NOTES cholecystectomy in specific subgroups

NOTES enthusiasts vs. NOTES sceptics	Value of p
Age	0.03
Importance of sexual life	0.01
Sexual attractiveness of the partner	0.03
Satisfaction from sexual life	< 0.001
Presumed satisfaction from sexual life of the partner	0.02
Relationship status	NS
Frequency of intercourse	NS



**Figure 1.** Attitude towards NOTES transvaginal cholecystectomy considered by potential patient’s sexual partner

infections (39%) and fertility problems (34%) were the most feared effects of the transvaginal cholecystectomy. The potential effect on the GI tract was not realized by the respondents. Details given in Table II.

### Overall attitude towards transvaginal NOTES cholecystectomy

Only 10% of the respondents would completely accept the transvaginal NOTES cholecystectomy in their partners. Ninety percent did not specify their opinion as they claimed the surgical access was not their problem. 13% of the respondents would dissuade their partner and 49% would be opposed (Figure 1).

For further group analysis “accept” and “completely accept” answers were pooled (19%) as NOTES enthusiasts, and “dissuade” answers were pooled with “oppose” (62%) as NOTES sceptics.

### Specific group differences

The accepted period of sexual abstinence was on average 4.11 week in NOTES enthusiasts and 3.01 in NOTES sceptics. The respondents with a negative attitude towards NOTES compared to those with a positive attitude were younger and had higher importance of sex life, higher sexual attractiveness of the partner, higher satisfaction from their sexual life and higher presumed satisfaction from sexual life of the partner. There were no differences between the groups in the relationship status and frequency of intercourse (Table III).

### Discussion

NOTES technology is considered to provide an excellent cosmetic effect as skin incisions are avoided. This benefit in addition to advantages in pain and wound infection reduction, and elimination of incisional herniation, creates an image of technology that nobody can resist. On the other hand, the frequencies of the above-mentioned problems nowadays are reasonably low with the use of laparoscopic surgery [9]. Therefore further reduction might not be significant for these parameters. The cosmetic advantage of NOTES is undoubted [10]. The choice of four 5-10 mm scars vs no scars visible at all might seem obvious. What the actual importance of the scars is can be to some extent answered in this study. The abdominal scars are perceived by the sex-

ual partners as a cosmetic defect only by 12% of the respondents. This can be concluded as being of marginal importance when one additionally considers that only for 7% of the respondents did the scars influence the overall sexual attractiveness of the partner.

Avoiding the laparotomy/laparoscopy risks and disadvantages is related to creating new risks and potential disadvantages. In the Thele *et al.* study gynaecologists were asked their opinion on transvaginal NOTES. The common concerns were infections, visceral lesions, infertility and adhesions [11]. At this point the actual value of NOTES access cannot be univocally stated. It is still not proven beyond question whether the benefits overcome the potential risks.

The overall perception of transvaginal NOTES cholecystectomy in the studied group is negative. The method is controversial, as is confirmed by the high number of extremely anti-NOTES votes (49% "oppose"). A total of 62% of the respondents have a negative perception of transvaginal NOTES cholecystectomy. Appreciation of NOTES by 19% of the respondents is similar to that presented in our previous study in potential NOTES patients (15%) [6]. In other studies the percentage of NOTES enthusiastic patients was higher, reaching 68% in Peterson's study on Californian women [5]. The cultural, ethnic and religious background of the women's attitudes seems to be one of the most important factors influencing attitudes towards NOTES. We hypothesize however that the negative, non-enthusiastic attitude of sexual partners, who don't agree to put their sex life and procreation at potential risk, is universal and not variable. The operational construction of a male brain seems to oppose any potential threats to sex and procreation. Especially a novelty procedure like NOTES with limited scientific data seems not convincing enough for male judgment. These hypotheses should be verified in other international or trans-cultural studies.

The negative attitude towards NOTES was observed in younger subjects with high appreciation of sex life, sexual attractiveness of the partner and sexual satisfaction. These data suggest that the potential threat to sex life and fertility is feared more by the subjects who have the most to lose. Risking high quality of sex life to achieve a better cosmetic effect seems not to be justified for them. In contrast, the group of NOTES enthusiasts scored lower in all

the above-mentioned aspects. Their potential loss in quality of sex life would therefore be less distinct if postoperative problems would arise.

The effect of scar formation in the vagina on the actual sexual function and fertility is unknown. It can be to some extent extrapolated from the hysterectomy, or vaginal prolapse studies; however, the extent of surgery and background are completely different. Although no significant difference in postoperative sexual functioning in women after transvaginal gynaecological surgery was observed, a decreased frequency of orgasms was noted [12]. It is interesting that the respondents would fear mostly dissatisfaction in their partners. What stands behind such fear, whether it concerns inability to have intercourse, painful intercourse, or decreased frequency or quality of orgasms, was not explored in our study.

The meaning of the word "infection" as a potential transvaginal NOTES cholecystectomy complication was not clearly defined in this study. In sexually active women, both fungal and bacterial infections are not rare. The residual flora has protective properties, but extensive instrumentalisation can result in introduction of pathogenic flora into the vagina [13]. Both of these groups translocated into the abdomen are potential sources of intra-abdominal infection [14]. On the other hand, infection of the vagina itself could be a problem as well, especially because the bacteria can be dragged both from the outside and inside (in inflammatory cholecystitis cases). These concerns provide a background for working out safe disinfection protocols (probably adopted from transvaginal hysterectomy preparation) and gallbladder extraction bags will be necessary. Explanatory conversation with the patient and/or the partner highlighting the complexity and multipoint prevention should significantly decrease the concerns about infective complications.

In summary, the general attitude of male sexual partners of potential NOTES transvaginal cholecystectomy patients is negative. With several possible problems and complications feared by the partners, they would mostly oppose or dissuade against NOTES transvaginal cholecystectomy. The cosmetic benefit seems not to justify undergoing a novelty procedure with potential complications threatening sexual life and procreation. This attitude was especially observed in young, sexually active males with high appreciation of sexual life. Both scientific and educational efforts are required to prove the safety

and efficiency of NOTES transvaginal cholecystectomy beyond question.

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## Appendix

### Part 1

#### NOTES

The NOTES is a new technology designed to access the abdomen through natural orifices such as the mouth, vagina or anus. It allows skin incisions to be avoided, and no visible mark is visible on the surface of the abdomen. This can potentially reduce the postoperative pain, which is mainly caused by damage of the highly innervated abdominal wall. Furthermore, it allows typical wound complications to be avoided. It is also intended to provide quicker recovery and return to work. The operation within the abdomen is the same as that performed via other accesses; only the site of entering the abdomen with surgical instruments is different.

#### NOTES transvaginal cholecystectomy

First introduced in humans in 2007. Under general anaesthesia the vaginal wall is incised and a special scope (camera) is introduced with the surgical instruments through this hole. The operating field in the case of cholecystectomy is located in the right upper quadrant of the abdomen, where the gall bladder is located. Similar manipulations within the vagina have been used for years for gynaecological/obstetric procedures, but these were limited to the pelvic contents. The general principles of gall bladder removal itself remain unchanged, with the difference being in the instruments insertion site.

### Part 2

1. Marital status:  
 Married     Permanent relationship     Single
2. What is the importance of sexual activity in your life? (score 1-10): .....
3. What is the sexual attractiveness of your partner? (score 1-10): .....
4. What is the frequency of sexual intercourse you are having with your partner?  
 Too low     Sufficient     Too high
5. What is your satisfaction from sexual life? (score 1-10): .....

6. What do you think is the satisfaction from sexual life of your partner? (score 1-10): .....

7. What is the accepted period of sexual abstinence after transvaginal surgery your partner could potentially undergo (score in weeks)? .....

8. Do you consider abdominal scars after surgery as a cosmetic defect? Yes/No

9. Do you think that abdominal scars after surgery decrease the sexual attractiveness of the partner? Yes/No

**If your partner were to consider undergoing NOTES transvaginal cholecystectomy, how would you respond (choose one)?**

- Completely accept
- Accept
- This is not your problem
- Dissuade
- Oppose

**What are your fears related to transvaginal NOTES cholecystectomy in your partner?**

Pain	Yes/No
Infection	Yes/No
Postoperative hernia	Yes/No
Fertility problems	Yes/No
Decreased sexual satisfaction – respondent	Yes/No
Decreased sexual satisfaction – partner	Yes/No
Other disorders of genitals	Yes/No
Urinary disorders	Yes/No
Defecation disorders	Yes/No
Gastrointestinal disorders	Yes/No

**What are the factors that can impair sexual and reproductive functions in women?**

Gynaecological surgery – transvaginal	Yes/No
Gynaecological surgery – transabdominal	Yes/No
Labour	Yes/No
Age	Yes/No
Frequency of intercourse	Yes/No
Number of partners	Yes/No
Hygienic issues	Yes/No