

Incidental (Prophylactic) Salpingectomy at Benign Gynecologic Surgery and Cesarean Section: a Survey of Practice in Austria

Inzidentelle (prophylaktische) Salpingektomie im Rahmen benigner gynäkologischer Eingriffe oder eines Kaiserschnitts: eine Umfrage zur klinischen Praxis in Österreich

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Key words

- ovarian cancer
- prophylactic salpingectomy
- incidental salpingectomy
- risk-reducing salpingectomy

Schlüsselwörter

- Ovarialkarzinom
- prophylaktische Salpingektomie
- inzidentelle Salpingektomie
- risikomindernde Salpingektomie

Abstract

Introduction: Most serous ovarian cancers are now thought to originate in the fallopian tubes. This has raised the issue of performing incidental salpingectomy (also called elective, opportunistic, prophylactic or risk-reducing salpingectomy) at the time of benign gynecologic surgery or cesarean section. We conducted an online survey to ascertain the policies regarding incidental salpingectomy in Austria in late 2014.

Material and Methods: All 75 departments of obstetrics and gynecology in public hospitals in Austria were surveyed for their policies regarding incidental salpingectomy at benign gynecologic surgery or cesarean section.

Results: Sixty-six of 75 surveyed departments completed the questionnaire, resulting in a response rate of 88%. Overall, 46 of 66 (70%) units reported offering or recommending incidental salpingectomy at benign gynecologic surgery, 12 units (18%) did not, and eight units (12%) did not have a consistent policy. Salpingectomy was the preferred method for surgical sterilization, including sterilization at the time of cesarean section (71% and 64% of units, respectively).

Conclusions: Incidental (elective, opportunistic, prophylactic, risk-reducing) salpingectomy is now widely offered at benign gynecologic surgery and cesarean section in Austria. Evidence for the role of the fallopian tubes in the origin of serous pelvic cancer has led to changes in clinical practice.

Zusammenfassung

Einleitung: Es wird inzwischen angenommen, dass die meisten serösen Ovarialkarzinome in den Eileitern entstehen. Damit stellt sich die Frage, ob eine inzidentelle (auch elektive, opportunistische, prophylaktische oder risikomindernde) Salpingektomie im Rahmen benigner gynäkologischer Eingriffe oder während einer Sectio caesarea durchgeführt werden sollte. Ende 2014 führten wir eine Online-Umfrage durch, um die diesbezügliche Praxis in Österreich zu ermitteln.

Material und Methoden: Alle 75 Abteilungen für Geburtshilfe und Gynäkologie in den öffentlichen Krankenhäusern Österreichs wurden nach ihrer Politik bezüglich der inzidentellen Salpingektomie im Rahmen benigner gynäkologischer Eingriffe oder eines Kaiserschnitts befragt.

Ergebnisse: Der Fragebogen wurde von 66 der 75 befragten Abteilungen ausgefüllt, was einer Rücklaufquote von 88% entspricht. Insgesamt gaben 46 von 66 (70%) Abteilungen an, dass sie eine inzidentelle Salpingektomie im Rahmen benigner gynäkologischer Eingriffe anbieten oder empfehlen. In 12 Abteilungen (18%) wurde sie nicht angeboten, und bei 8 Abteilungen (12%) gab es diesbezüglich keine einheitliche Politik. Die Salpingektomie ist die bevorzugte Methode der chirurgischen Sterilisation, auch bei Sterilisationen, die im Rahmen der Sectio caesarea durchgeführt werden (71 bzw. 64% der Abteilungen).

Schlussfolgerung: Die inzidentelle (elektive, opportunistische, prophylaktische, risikomindernde) Salpingektomie im Rahmen benigner gynäkologischer Eingriffe oder eines Kaiserschnitts wird inzwischen in der Mehrzahl öffentlicher Krankenhäuser in Österreich angeboten. Der Nachweis über die Involvierung der Eileiter bei der Entstehung seröser Beckenkarzinome hat eine Änderung der klinischen Praxis bewirkt.

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Bibliography

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Key Message

Evidence for the role of the fallopian tubes in the origin of serous ovarian cancer has led to policies encouraging concomitant salpingectomy at the time of elective gynecologic procedures or cesarean section.

Introduction

Ovarian cancer remains the leading cause of gynecologic cancer death and the fifth most common cause of cancer death in women [1,2]. Early detection remains elusive [3]. Research over the last 15 years strongly suggests that the origin of serous ovarian and pelvic cancer lies in an interaction between the ovaries and the fallopian tubes [4–8]. The basis for this model was laid in 2001 by Piek et al. [4], who described dysplastic changes in the fimbriae of fallopian tubes removed from patients with a BRCA mutation. These dysplastic changes are now designated serous tubal intraepithelial carcinomas (STICs) and are considered a precursor of both hereditary and sporadic serous ovarian and pelvic cancer [5–8].

Epidemiologic data indicate that salpingectomy and even tubal ligation are associated with a substantial reduction in the risk of serous ovarian cancer [9–11]. In a population-based cohort study of more than 5 million women in Sweden, bilateral salpingectomy was associated with a hazard ratio of 0.35 compared with the unexposed population [11]. Consequently, incidental salpingectomy (also called opportunistic, prophylactic or risk-reducing salpingectomy) at the time of benign gynecologic or obstetric surgery has become an issue [12–15]. However, salpingectomy, akin to hysterectomy [16], has also been thought to potentially impair blood supply to the ovary and has been associated with an earlier age of menopause.

To ascertain the policies regarding incidental salpingectomy in Austria, we surveyed all departments of obstetrics and gynecology at public hospitals in Austria for their policies on salpingectomy during surgery for benign indications or cesarean section in women desiring sterilization.

Material and Methods

Online survey

In late 2014 we surveyed all 75 public departments of obstetrics and gynecology in public hospitals in Austria regarding their policies on incidental salpingectomy during benign gynecologic procedures or cesarean section. The survey was done using a short questionnaire (► Fig. 1) that we developed to ascertain unit policies with regard to prophylactic (or opportunistic or incidental) salpingectomy in women desiring sterilization who were undergoing benign gynecologic procedures or cesarean section. The online tool SurveyMonkey (www.surveymonkey.com) was used to send a personal link to the questionnaire to the chairs of the respective departments. Departments that did not return the questionnaire were re-contacted by email or telephone. Private hospitals (which perform approximately 10% of gynecologic and obstetric procedures in Austria) were not included in the survey. At the time of the survey (2014) the Austrian Society of Obstetricians and Gynecologists (OEGGG) had no position on incidental salpingectomy [17]. Because this was a survey of institutional

policies without patient data or interventions the protocol was not submitted to the ethics committee.

Results

Response rates, size of departments

Sixty-six of 75 surveyed departments completed the questionnaire, resulting in a response rate of 88%. Nine (14%) of the 66 responding departments performed < 500, 35 (53%) performed 500–1000, and 22 (33%) performed > 1000 gynecologic procedures per year.

Salpingectomy at the time of benign gynecologic surgery (► Table 1)

Forty-six (70%) of 66 units answered “Yes” to the question whether they offered or recommended salpingectomy to women scheduled for a benign gynecologic procedure who did not wish to preserve fertility (► Table 1). All 46 of the units who answered affirmatively recommended salpingectomy because of the possibility that the procedure would reduce the risk for ovarian cancer; 24 units (49%) additionally wrote that they recommended salpingectomy to avoid other potential sequelae of retained tubes (hydrosalpinx, tubal pregnancy, etc.). Two units added that they had always recommended salpingectomy.

Twelve units (18%) did not offer or recommend incidental salpingectomy to patients undergoing benign gynecologic procedures. Five of these 12 units (8%) indicated concerns about blood supply to the ovary, four (6%) answered that the issue had not been discussed in their department, two (3%) felt there was insufficient evidence for prophylactic salpingectomy, and one was concerned about longer operating times and an increased risk of bleeding. None of the respondents indicated that they did not think that ovarian cancer arose from the fallopian tubes.

Salpingectomy as a method for surgical sterilization (excluding cesarean section)

All 66 respondents answered this question and multiple answers were permitted. The most common method for sterilization was salpingectomy/fimbriectomy (71%), followed by coagulation (58%) and ligation (12%). No unit used clips. Two units did not offer tubal sterilization.

Salpingectomy for sterilization at cesarean section

Salpingectomy/fimbriectomy was the most common method used for sterilization at the time of cesarean section (42/66, 64%), followed by coagulation (22/66, 33%), and ligation 29% (19/66). No unit used clips and two units did not offer tubal sterilization at the time of cesarean section.

Discussion

With a response rate of 88%, this survey shows that by late 2014 a substantial majority of departments of obstetrics and gynecologists in public hospitals in Austria offer salpingectomy at the time of benign gynecologic surgery, surgical sterilization or cesarean section to women desiring sterilization. Salpingectomy was offered with the intention of reducing the risk for ovarian cancer. Only 18% of responding units did not recommend incidental salpingectomy. The reasons for doing so included concerns about blood supply to the ovary, not considering the evidence on the

Table 1 Policies on prophylactic salpingectomy at the time of benign gynecologic surgery or cesarean section of the departments of obstetrics & gynecology in Austria according to size of department.

	Overall (n = 66)	Small department (n = 9)	Average department (n = 35)	Large department (n = 22)
In your department are women scheduled for benign gynecologic surgery (e.g., laparoscopy, laparotomy, hysterectomy, adnexal surgery) with no desire to preserve fertility routinely offered or recommended prophylactic salpingectomy/fimbriectomy?				
▶ Yes	46 (70%)	4 (44%)	26 (74%)	16 (73%)
▶ No	12 (18%)	5 (56%)	3 (9%)	4 (18%)
▶ Depends on the physician	8 (12%)	0 (0%)	6 (17%)	2 (9%)
How is tubal sterilization carried out in your department (excluding cesarean section)? (multiple answers possible)				
▶ Salpingectomy/fimbriectomy	47 (71%)	4 (44%)	26 (74%)	17 (77%)
▶ Ligation	8 (12%)	2 (22%)	2 (6%)	4 (18%)
▶ Clips	0 (0%)	0 (0%)	0 (0%)	0 (0%)
▶ Coagulation	38 (58%)	6 (67%)	20 (57%)	12 (55%)
▶ We don't offer tubal sterilization	2 (3%)	0 (0%)	2 (6%)	0 (0%)
How are tubal sterilizations at cesarean section carried out in your department? (multiple answers possible)				
▶ Salpingectomy/fimbriectomy	42 (64%)	3 (33%)	26 (74%)	13 (59%)
▶ Ligation	19 (29%)	3 (33%)	8 (23%)	8 (36%)
▶ Clips	0 (0%)	0 (0%)	0 (0%)	0 (0%)
▶ Coagulation	22 (33%)	4 (44%)	10 (29%)	8 (36%)
▶ We don't offer tubal sterilization	2 (3%)	0 (0%)	1 (3%)	1 (4%)

tubal origin of ovarian cancer sufficient to change clinical practice, and a hospital policy of not offering tubal sterilization.

Similarly, salpingectomy/fimbriectomy was the preferred modality for patients requesting surgical sterilization, including sterilization at the time of cesarean section.

While the primary reason for performing salpingectomy in our survey was to reduce the risk for ovarian cancer, about half of the respondents also listed prevention of subsequent tubal pathologies as an indication. This appears reasonable in the light of studies showing an increased risk of subsequent salpingectomy in patients with retained tubes after hysterectomy [18].

The strengths of the present survey are that it assesses a policy across an entire (albeit small) country and the high response rate. A limitation of this survey is that private hospitals were not surveyed, although the bulk of surgery in Austria is done in public hospitals. Moreover, we surveyed policies as opposed to actual surgical data, and policies may not always translate into clinical action. Finally, we looked at current policies and did not ask whether these had been changed; however, our strong impression was salpingectomy was not routinely performed in Austria before the evidence for the tubal origin of serous cancer become more generally known.

The accumulating and now widely accepted evidence for the role of the tubes in the pathogenesis of serous pelvic cancers [4–8] has prompted discussions about offering incidental salpingectomy. In 2010 the Ovarian Cancer Research Program of British Columbia started an educational initiative promoting opportunistic salpingectomy at the time of hysterectomy or surgical sterilization, which led to a shift in the surgical paradigm in the province [13]. In late 2013 the Society of Gynecologic Oncologists (SGO) in the United States stated that “for women at population (average) risk of ovarian cancer, salpingectomy should be considered at the time of hysterectomy, in lieu of tubal ligation, and also at the time of other pelvic surgery” [14]. In 2014 the Royal College of Obstetricians and Gynaecologists (RCOG) issued a Scientific Impact Paper recommending that “women who are not at high risk for BRCA mutation and have completed their families [should] be carefully considered for prophylactic removal of the fallopian tubes with conservation of the ovaries at the time of

gynecological or other intraperitoneal surgery” [11]. The Austrian Society of Obstetricians and Gynaecologists (OEGGG) issued a similar position paper in 2015 [13] after the survey reported here was carried out.

There have been limited surveys of practice with regard to opportunistic salpingectomy in other countries. In the United States a small survey of 234 practicing physicians found that 54% of respondents recommended salpingectomy at the time of benign hysterectomy [19]. However, Mikhail et al. [20] reported that rates of bilateral salpingectomy nearly quadrupled nationally between 1998 and 2011. Recently, Garcia et al. [21] reported that the rate of salpingectomies combined with hysterectomy but without oophorectomy in the Kaiser Permanente system had increased from 15 to 73% between 2011 and 2014. In 2012 Kamran et al. surveyed 123 doctors in Ireland and received responses from 81 (66%) [22]. In contrast to our findings, clips were the preferred technique for tubal sterilization as an independent procedure and most respondents did not routinely perform salpingectomy at the time of benign hysterectomy [22]. In 2013 Reade et al. surveyed Canadian obstetrician-gynecologists, with a response rate of 25%, and identified barriers to implementation [23]. In 2015 Venturella et al. found that 80% of surveyed physicians in Italy reported performing prophylactic salpingectomy, with patchy geographic implementation [24]. In 2016 Chene et al. [25] reported that over 40% of gynecologists in France performed opportunistic salpingectomy during laparoscopic or abdominal hysterectomy, as opposed to 12% during vaginal hysterectomy [25].

This is the first survey of policies regarding opportunistic salpingectomy in a German-speaking country. German-language clinical guidelines for benign hysterectomy [26] and ovarian cancer [27] do not recommend incidental salpingectomy as a risk-reducing procedure for ovarian cancer. The Working Group for Gynecologic Oncology (AGO) in Germany issued a statement that the “evidence is not yet strong enough to justify a universal recommendation of opportunistic salpingectomy at every hysterectomy” while noting that “all patients should be informed about the potential beneficial impact” [28]. In contrast, in 2015 the Austrian Society for Obstetrics and Gynecology (OEGGG) issued a

Prophylactic salpingectomy at benign gynecologic and obstetric procedures: A survey of practice in Austria

Dear Department Chair,

In the last few years there have been intensive discussions whether serous ovarian cancer originates in the fimbria of the fallopian tubes. Accordingly, some units and colleagues have begun offering prophylactic/incidental salpingectomy at the time of benign gynecologic or obstetric operations in women with no desire to preserve fertility.

On the other hand, there have been discussions whether prophylactic removal of the tubes might impair the blood supply to the ovaries and thus impair ovarian function.

We are conducting a survey of all public departments of Obstetrics & Gynecology in Austria to ascertain to what extent prophylactic salpingectomy is performed in Austria.

Please take a moment to complete the following questions. You have the opportunity to add a comment to every question.

Completing the questionnaire should take less than 5 minutes. Of course your responses will be evaluated anonymously.

Many thanks.

1. How many gynecologic operations (excluding obstetric procedures, curettages and conisations) are performed annually at your department?

- < 500
- 500–1000
- > 1000

Comment:

2. At your department are women scheduled for benign gynecologic surgery (e.g., laparoscopy, laparotomy, hysterectomy, adnexal surgery) with no desire to preserve fertility routinely offered or recommended prophylactic salpingectomy/fimbriectomy?

- Yes
- No
- Depends on the physician

Comment:

3. If you answered "Yes" to question 2: why? (tick all that apply)

- Because of the possible role of the fallopian tubes in the development of ovarian cancer.
- To avoid potential sequelae such as hydrosalpinx, tubal pregnancy, PID, tubal carcinoma, etc.
- We've always done it this way.

Comment:

4. If you answered "No" to question 2: why?

- We do not believe that ovarian cancer originates in the tubes.
- We are concerned about the blood supply to the ovary after salpingectomy.
- Salpingectomy would increase the duration of the operation and increase the risk of bleeding.
- We haven't discussed this.
- Other:

Comment:

5. How is tubal sterilization done at your department (excluding cesarean section)?

- Salpingectomy/fimbriectomy
- Ligation
- Clips
- Coagulation
- We don't offer tubal sterilization.

Comment:

6. How are tubal sterilizations at cesarean section done at your department?

- Salpingectomy/fimbriectomy
- Ligation
- Clips
- Coagulation
- We don't offer tubal sterilization.

Comment:

Thank you for your time and for completing this survey. Are you interested in receiving the results of this survey?

- Yes
- No

Fig. 1 Questionnaire.

recommendation for incidental salpingectomy at the time of benign gynecologic surgery in appropriate cases [17].

Historically there have been concerns that hysterectomy or salpingectomy alone might impair the blood supply to the ovary and could contribute to premature menopause [16]. Earlier ovarian failure has been associated with premenopausal hysterectomy, but it was unclear whether the cause was the surgery itself or the underlying condition [29]. Salpingectomy performed with laparoscopic hysterectomy does not appear to have short-term deleterious effects on ovarian reserve as assessed by postoperative levels of anti-Müllerian hormone [30]. Salpingectomy is frequently performed in patients treated in assisted-reproduction programs and does not appear to abate ovarian response in subsequent artificial reproduction cycles [31].

In summary, by the end of 2014 most Austrian departments of obstetrics and gynecology were offering or recommending incidental (opportunistic, prophylactic, risk-reducing) salpingectomy at the time of benign gynecologic surgery, tubal sterilization or cesarean section. The evidence for the role of the fallopian tubes in the pathogenesis of serous ovarian and peritoneal cancers has led to changes in clinical practice.

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Conflict of Interest

None of the authors have conflicts of interest with regard to this topic.

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