Unplanned return to the operating theatre in gynaecology: five years' experience

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A B S T R A C T

Objectives: To review our incidence of unplanned return to the operating theatre (OT) and compare our findings with the published literature.

Study design: Five year retrospective review of case notes in our gynaecology department between January 2005 and April 2010. Women were eligible for recruitment if they returned to the OT for an unplanned operation during the same admission following a gynaecological operation.

Results: Seventeen cases were identified, mean age 40 years (range 27–52 years). The incidence of unplanned return to the OT was 0.03%. Elective and emergency initial operations accounted for 72% and 28% respectively. Over 80% of the cases followed a hysterectomy, giving an overall risk of return to OT after hysterectomy of 2%. Reactionary bleeding was the cause in all cases. A specific bleeding site was identified in 82% of the women. The mean time between primary surgery and return to the OT was 7.9 h. The triggering factors were a combination of a change in observations, postoperative bleeding, a drop in haemoglobin level and uncontrolled abdominal pain despite analgesics. Blood transfusion was required in 53% of cases and one woman was admitted to the intensive care unit for one night. No women required further reoperation, and all were discharged home with no long-term sequelae.

Conclusion: Unplanned reoperation is a potentially life threatening complication, and therefore early recognition; resuscitation and emergency return to the OT to stop the bleeding are the main principles of management.

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1. Introduction

Unplanned return to the operating theatre (OT) is defined as a return to the theatre due to complications or untoward outcomes related to the initial surgery [1]. It has been suggested as a screening tool for quality assurance and for identifying medical malpractice [2], as well as an outcome measure [3]. Audit figures from the English Department of Health showed that 10% of patients admitted to an acute hospital suffer some kind of patient safety incident and up to half could have been prevented [4]. Although post-operative complications may still occur despite all efforts to provide the best care, early recognition and prompt action are likely to improve outcomes [5]. The aim of the present study was to review our incidence of unplanned return to the OT, and compare our results with published literature.

2. Materials and methods

This study is a retrospective review of the case notes in a gynaecology department between January 2005 and April 2010. The operations included general gynaecology, gynaecological oncology and urogynaecology. The inclusion criteria required that women returned to the OT for unplanned operation during the same admission. Women were identified from our operating theatres database. Case notes were reviewed, and the data analysed.

3. Results

Between January 2005 and April 2010, a total of 5493 gynaecological operations were performed. Of these, 3938 (72%) were elective and 1555 (28%) were emergency. The breakdown of operation skill-mix is outlined in Table 1. Seventeen women fulfilled the inclusion criteria; the mean age was 40 years (range 27–52 years).

Whilst 16 women (94%) returned to the OT following elective surgery, one woman (6%) returned after an initial emergency surgery (laparotomy for ruptured tubal pregnancy). Our incidence of unplanned return to the OT was 0.03%.

All the initial operations were performed for benign gynaecological indications. Abdominal hysterectomy was the primary operation in 13 cases (76%). The remaining four operations were one vaginal hysterectomy (6%), one laparotomy for ruptured tubal pregnancy (6%), one laparoscopic right salpingo-oophorectomy...
performed, the patient's medical and surgical history, the experience of the surgeon and available resources. The exact complication rates for specific surgical procedures are poorly reported [6].

Dierks et al. [7] showed that unplanned return to OT is underreported, which limits the ability to identify quality and safety issues. The reasons for under-reporting are numerous but include: variations in agreement about which cases should be reported, confusion over who should report cases, workload involved in the reporting process, a lack of any standardised expectations regarding the goals of reporting and a cultural behaviour that motivates silence on certain outcomes.

Birkmeyer et al. [8] showed that patients may need to return to the OT for various reasons: in addition the mortality rates were significantly higher in general surgical patients who experienced unplanned return to the OT than those who did not. Unfortunately there are no published standards for what constitute an acceptable reoperation rate [8]. Although, there is a paucity of data on unplanned return to the OT in obstetrics and gynaecology. gynaecological surgery accounts for 11.1% of the overall hospital unplanned return to the OT [7].

Our incidence of unplanned return to the OT was 0.03%. Other reports from obstetrics and gynaecology showed similar rates. Connolly [9] reported an incidence of 0.03%. Ashton et al. reported an incidence of 0.05%; furthermore, 0.46% of the patients required one or more operations to control bleeding [10].

In our study, sixteen (94%) of the cases followed elective surgery and one (6%) was after an emergency operation. This contrasts with a report from general surgery showing patients undergoing non-elective procedures were more likely to return to the OT than patients undergoing elective surgery. Those authors concluded that this was because emergency cases were more likely to have undergone open abdominal procedures in comparison with elective procedures [8]. This probably reflects the differences between elective and emergency cases in general surgery compared with gynaecology.

The most common primary operation in this study was hysterectomy, which accounted for 80% of the cases: abdominal in 13 (76%), and vaginal in one (6%). The rate of unplanned return to the OT after abdominal hysterectomy was 4%, and after vaginal 0.03%, giving a combined rate of 2%. Hysterectomy is one of the most common major general gynaecological operations, with around 100,000 procedures performed annually in the UK [11]. Lambaudie et al. [12] found that the reoperation rate was 0.8% in a study of 1604 patients who underwent a hysterectomy for benign diseases, including 1248 vaginal hysterectomies (77.9%), 190 laparoscopically assisted vaginal hysterectomies (11.9%) and 166 abdominal hysterectomies (10.2%), and did not differ with type of the hysterectomy.

There were no intra-operative complications reported in 82% of the cases in our study during the primary operations. Excessive scarring or adhesions, limited access and bleeding were recorded in only 18% of the cases during the primary operation. The VALUE national hysterectomy study (37,512 cases) reported that post-operative complications occurred in around 1% of women, and the strongest risk factor was a history of operative complications. Both

(6%) and one diagnostic laparoscopy (6%) (Table 2). Four percent of the women having an abdominal hysterectomy and 0.3% having a vaginal hysterectomy experienced an unplanned return to OT, giving a combined rate of return to the OT after hysterectomy 2.5%.

The initial operation was performed by a senior gynaecologist in 13 cases (76%); the remaining 4 operations (24%) were performed by a trainee gynaecologist with direct senior gynaecologist supervision. The review of the operation notes of the 17 cases showed that in 14 operations (82%), the procedures were described as standard with no excessive blood loss. Surgical difficulties, such as excessive scar tissue, adhesions, limited access and bleeding, were recorded in the operation notes in only 3 cases (18%). It is the current practice in our department to use closed suction surgical drains prophylactically after abdominal operations, and in the study cohort they were sited at the initial operation in 12 cases (71%).

Suspected reactionary bleeding was the reason for return to the OT in all women. This suspicion was based on factors such as large volumes of blood in the abdominal closed suction surgical drains, a fall in blood pressure and a rise in pulse rate, uncontrolled abdominal pain despite anaesthetics and drop in the haemoglobin level (Table 3).

The time between the primary operation and the return to the OT was less than 6 h in 9 women (52%), between 6 and 12 h in 4 cases (24%) and between 12 and 24 h in 4 cases (2%). This gave a mean time of 7.9 h for return to the OT. In 14 cases (82%) a bleeding point was identified during the second operation (Table 4). The average blood loss was 750 ml in 11 cases (64%), and 1000 ml in 6 cases (36%). Nine patients (53%) were transfused with blood; the average volume transfused was 3 units.

One patient (6%) required overnight admission to the Intensive Therapy Unit (ITU). None required further reoperation and all were discharged home: none suffered any long-term sequelae.

4. Comments

All surgical procedures carry inherent risk of complications. Specific complications will depend on the particular procedure performed, the patient's medical and surgical history, the experience of the surgeon and available resources. The exact complication rates for specific surgical procedures are poorly reported [6].

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### Table 1

<table>
<thead>
<tr>
<th>Item</th>
<th>Number (%)</th>
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<tbody>
<tr>
<td>Total gynaecological operations</td>
<td>5493</td>
</tr>
<tr>
<td>Elective operations</td>
<td>3938 (72%)</td>
</tr>
<tr>
<td>Emergency operations</td>
<td>1555 (28%)</td>
</tr>
<tr>
<td>Abdominal hysterectomy ± bilateral salpingo-oophorectomy</td>
<td>322 (6%)</td>
</tr>
<tr>
<td>Vaginal hysterectomy ± pelvic floor repair</td>
<td>294 (5%)</td>
</tr>
<tr>
<td>Laparoscopic procedures</td>
<td>836 (15%)</td>
</tr>
</tbody>
</table>

### Table 2

<table>
<thead>
<tr>
<th>Operation</th>
<th>Number of cases (%)</th>
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</thead>
<tbody>
<tr>
<td>Abdominal hysterectomy ± bilateral salpingo-oophorectomy</td>
<td>13 (76%)</td>
</tr>
<tr>
<td>Vaginal hysterectomy ± pelvic floor repair</td>
<td>1 (6%)</td>
</tr>
<tr>
<td>Laparotomy for ruptured ectopic</td>
<td>1 (6%)</td>
</tr>
<tr>
<td>Laparoscopic right salpingo-oophorectomy</td>
<td>1 (6%)</td>
</tr>
<tr>
<td>Diagnostic laparoscopy</td>
<td>1 (6%)</td>
</tr>
</tbody>
</table>

### Table 3

<table>
<thead>
<tr>
<th>“Trigger” factors</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large blood volume in drain and abnormal observations</td>
<td>7 (41%)</td>
</tr>
<tr>
<td>Bleeding from the abdominal wound</td>
<td>3 (18%)</td>
</tr>
<tr>
<td>Abnormal observations and pain</td>
<td>2 (12%)</td>
</tr>
<tr>
<td>Vaginal bleeding</td>
<td>2 (12%)</td>
</tr>
<tr>
<td>Large volume in the drain and abdominal pain</td>
<td>2 (12%)</td>
</tr>
<tr>
<td>Abdominal pain and drop in the haemoglobin level</td>
<td>1 (6%)</td>
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</tbody>
</table>
vaginal and laparoscopic techniques had significantly higher adjusted risks than abdominal operations [13].

In 2 cases (12%), return to the OT was after laparoscopic surgery. Our rate of return to OT after laparoscopic surgery was 0.02%. A current Royal College of Obstetricians and Gynaecologists (RCOG) guideline states that in 1:1000 women will be affected by serious complication following gynaecological laparoscopic surgery [14]. The size of our population is probably too small to comment on the complication rate of laparoscopic surgery.

Suspected bleeding was the reason for return to the OT in all cases. Other reports showed a similar trend [8,9]. This suspicion was based on a combination of various clinical and laboratory “trigger” factors in all cases (Table 4). We acknowledge, however, that postoperative analgesic requirement may vary between patients, and that postoperative observations may change for various reasons, in addition some degree of concealed postoperative bleeding may develop. In this cohort, return to the OT was a clinical judgement based on a combination of “trigger” factors. The Modified Early Warning Score (MEWS) [15] is a simple, physiological score and considered as a track and trigger scoring system. The triggers are based on routine observations. The primary purpose of the MEWS is to prevent delay in intervention by early recognition of a patient’s deteriorating condition. We did not review the effect of using the MEWS in the management of our cases as this was introduced into the Trust midway during the evaluation period.

The primary surgical operation was performed by a senior gynaecologist in 76% of the cases and by a trainee gynaecologist with direct supervision in 24% of the cases. Whilst there are currently no published reports in gynaecology regarding the reoperation rates of surgical procedures performed by trainee doctors under supervision; a report from general surgery found no differences in the rate of technical complications, postoperative morbidity and mortality, or length of hospitalization [16].

Reactionary bleeding is the major cause for unplanned return to the OT following gynaecological surgery, and is described as postoperative bleeding that occurs in the first 24 h after surgery [17]. In our report the rates of postoperative bleeding following abdominal and vaginal hysterectomies were 4% and 0.03% respectively. Makinen et al. [18] reported postoperative bleeding rates of 3.1% and 2.7% in vaginal and laparoscopic hysterectomy respectively.

It is not clear how postoperative bleeding is best treated. Holub and Jabor [19] showed that operative laparoscopy is ideal to treat bleeding after vaginal or laparoscopic hysterectomy. This, however, requires advanced operative laparoscopy skills, and if these are not available a laparotomy should be performed without delay to prevent further blood loss occurring.

The use of surgical drains is controversial. In our study surgical drains were used prophylactically in 12 women (71%), and over 50% had large volumes of blood in the drain bag, which had contributed to aiding in diagnosis. Sulsu et al. [20] showed that postoperative complications cannot be prevented by using drains, and they may increase postoperative pain and the analgesic requirement, and prolong the hospital stay.

Seventy six percent of the women returned to the OT within 12 h of the primary surgery. The mean time was 7.9 h. The length of time between the primary surgery and return to the OT has an important role in the management. The duration of time is probably related to rate of bleeding, where mild continuous “oozing” takes longer to be clinically apparent compared with more severe bleeding. Successful management depends on prompt diagnosis, immediate resuscitation, and operative intervention.

The second operation was laparotomy in 96% of the women and examination under anaesthesia following the vaginal hysterectomy (6%). A specific bleeding site was identified in 14 cases (82%). We acknowledge that this percentage is higher than in another study [10] but it is not clear why we identified more bleeding sites in our series. One possible explanation is that we closed the abdomen before securing haemostasis completely. It is more likely, however, that a bleeding point subsequently developed after the abdomen was closed. In addition, manipulation during the second procedure may have created a new bleeding site. The average blood loss was 750 ml in 11 cases (64%), and 1000 ml in 6 cases (36%). Nine patients (53%) were given blood; the average volume transfused was 3 units.

In our series, one patient (6%) required overnight admission to the ITU. None of the women in our report required another reoperation and all women were discharged home with no long-term sequelae. As part of quality control, all cases were reviewed by the risk management team in the gynaecology department.

Patients may return to the OT for various reasons [8]. Whilst return to OT cannot be prevented as every surgical operation carries inherent risks, the rate may be reduced. There are currently no published reports on how to reduce the rates of unplanned return to the OT. Therefore it seems reasonable to suggest comprehensive peri-operative risk assessment taking into consideration the indication for the surgery, patient’s risks and procedure risks, and the availability of adequate surgical expertise. Furthermore, attention to details, audit, risk management and peer reviews may all help reduce the rates.

5. Conclusion

In our retrospective cohort the incidence of unplanned return to the OT was 0.03%. Hysterectomy was the most common reason for return to the OT, in which the rate was 2%. We identified the following factors as being important in making the diagnosis; post operative bleeding, overt or covert, pain despite adequate analgesics, and change in observations — mainly an increase in heart rate and a drop in blood pressure. No woman required further reoperation and all were discharged home. Unplanned reoperation is a potentially life threatening complication; therefore early recognition, resuscitation, and emergency return to the OT to stop the bleeding are the main principles of management. Introduction of MEWS may help early detection and intervention, reducing further morbidity.

Conflict of interest

The authors declare that they have no conflicts of interest.

References


