



Motion Study of Hysterolaparoscopy In Endoscopy OT of a Teaching Institute

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ABSTRACT

Objectives: To study time- motion of hysterolaparoscopy in endoscopy operation theatre. To find out various factors which cause delay in procedure and suggest corrective measures. **Material and methods:** 20 women with infertility were randomly selected for the study. Time-motion was recorded by an independent observer for various steps starting from shifting the patient to operation theatre to shifting those out of operation theatre. The data collected was tabulated and analyzed using statistical methods. **Results:** Delays were detected in various steps of the procedure. The factors which caused delay included equipment failure, insufficiently trained medical personnel, patient factors like obesity and previous surgeries making present surgery difficult, additional surgical procedures, and inadequate OT staff. **Conclusions:** Considering all the factors causing delays in various steps of Hysterolaparoscopy, few corrective measures were suggested. They are intense training of medical personnel, properly maintained surgical, anaesthesia and supportive electrical equipment, frequent stock-checks of necessary drugs, and encouraging supporting OT staff for quick and timely action.

KEYWORDS: Time-motion, Hysterolaporoscopy, infertility

INTRODUCTION

The present study was carried out in the department of Obstetrics & gynecology of Shrimati kashibai Navale Medical College & general Hospital (SKNMC&GH), Narhe, Pune, over a period June 2012 to August 2012. Our institute is delivering free treatment for all. This has led to huge workload. We have a long list of operative cases every day. Many a times we have to postpone cases because of non-completion of list. This initiated us into the present study, the time-motion study, so that we could find out factors which prolong the procedures.

OBJECTIVES

- 1) To study time-motion in endoscopy OT for Hysterolaparoscopy.
- 2) To find out factors which affect time-motion in each of the steps starting from shifting patients to OT to shifting those out of the OT.
- 3) To formulate corrective measures to save time or use time efficiently during each operative procedure so that more and more cases can be done to finish the day list, not jeopardizing the safety of patients.

MATERIAL AND METHODS

The study included 20 cases of infertility who underwent Hysterolaparoscopy. The study was conducted in the department of Obstetrics & Gynecology of Shrimati Kashibai Navale Medical College & General Hospital (SKNMC&GH) over the period June 2012 to August 2012. The cases were randomly selected. The study was conducted after approval of the Ethics Committee.

Inclusion criteria:

- 1) All the women with infertility undergoing Hysterolaparoscopy in minor OT on author's minor OT day.
- 2) Availability and presence of independent observer for time- keeping.

Exclusion criteria:

Absence of an independent observer.

METHODS

Timing of each of the following steps was recorded by an independent observer.

- a) Shifting the patient to OT to induction of anaesthesia.
- b) Induction of anaesthesia to incision.
- c) Incision to entry of laparoscopy port in the abdomen.
- d) Time required for laparoscopy starting from incision to port exit.
- e) Time required for hysteroscopy.

- f) Incision to closure of wound.
- g) Total time required for procedure. In many cases both the laparoscopy and hysteroscopy were done simultaneously by two operators.
- h) Closure of wound to recovery from anaesthesia.
- i) Recovery from anaesthesia to shifting out of theatre.

All the above mentioned steps, henceforth, will be referred in the article as a,b, c etc.

Other data such as availability of OT technician, problems during procedure along with routine patient details were recorded.

All the data were analyzed statistically.

RESULTS:

- 1) Table 1 – shows age distribution of women undergoing study.

Table1 showing age distribution of women

Age Group (years)	No of women	Percentage of total
<20	2	10
21-25	10	50
26-30	7	35
31-35	1	5
Total	20	

- 2) Table 2- shows weight distribution of women undergoing study.

Table 2 showing weight distribution of women

Weight groups(Kg)	No of women	Percentage
31-40	4	20
41-50	6	30
51-60	6	30
61-70	1	5
>70	3	15
Total	20	

3) Table 3 showing various averages, acceptable upper limit for each step & No of cases in which delay occurred

Values in Minutes	Steps*								
	a	b	c	d	e	f	g	h	i
Average	10.80	18.55	4.10	29.90	12.10	35	44.85	16.40	6.95
Median	9.50	19.5	4.50	24	10	25	41	10	5

Std Deviation	8.55	10.22	2.20	18.89	6.01	21.70	17.57	24.54	3.28
Upper limit for each step (Median+Std Dev)	18.05	29.72	6.70	42.89	16.01	46.70	58.57	34.54	8.28
Delay in No of cases	2	3	3	4	4	5	5	2	7
Percent of total	10	15	15	20	20	25	25	10	35

*--- steps a, b, c etc are as described earlier in "Methods".

We have tabulated timings for each step. Averages, median, and 1 Standard deviation were calculated. The upper limit of timing for each step is a sum of median value and 1 standard deviation. Median value is appropriate because it tells us the most frequent duration required for each step. Any value beyond the "upper limit" indicates delay in particular step. We found delay in each step because of one or the other reasons. Frequent delays were noted in "incision to closure", "total procedure time" and "recovery from anaesthesia to shifting out of OT".

4) Table 4 showing reasons for delay in particular step of cases under study.

Out of 180 steps involved in operating 20 cases, delay occurred in 35 steps (19.4%)

Serial No	Reasons for true delay or delay on the basis of statistical values	No of cases	Percentage of total no of delayed steps N=35
1.	Junior anaesthetist	2	5.7
2	Junior surgeon	1	2.86
3	Learning new technique (eg. Osama technique of vagino-cervico-hysteroscopy)	2	5.7
4	Additional surgical procedure	2	5.7
5	Obesity of patient	2	5.7
6	Equipment failure	5	14.29
7	Non-availability of technician	5	14.29
8	Difficult helping OT staff	7	20
9	Delays in spite of surgeon being senior	3	8.57

DISCUSSION

Because of heavy operative load in both minor and major operation theatres of our institute, effective time management becomes imperative. There are many areas where time can be utilized appropriately. Managing women with infertility is of prime importance. Training of residents in basic skills and that of seniors in advance skills is of equal importance. Hence little more time spent on training is reasonable. But exceeding upper limit of particular step needs corrective measures. Apart from operative delays, delays because of equipment failure, nonavailability of technician for quick help also matter. Other factors which led to delay were obesity of patient making induction of general anaesthesia and intubation difficult. Obesity also led to delayed port entry in the abdomen.

Using newer technique, such as that advocated by Dr Osama from Egypt, of vagino-cervico-hysteroscopy also prolonged the procedure. But this is not true delay in procedural step. Training personnel in this procedure is important because it helps in thorough examination of vagina, cervix in addition to uterine cavity. Many vaginal and cervical lesions may be clearly visualized.

In few cases, additional surgical procedures such as fimbriostomy, cystectomy were done during laparoscopy leading to prolonged procedural time.

Equipment failure in the form of nonavailability of CO₂, nonavailability of appropriate fluid during hysteroscopy, faulty monitor also contribute to delay.

Sometimes introduction of hysteroscope in uterus becomes difficult because of noncompliant cervix causing delay.

Much time is wasted in shifting patient in and out of theatre. Saha P et al reported similar views regarding this delay.¹ The key to management of the operating unit is not only to coordinate the daily procedures, but also to interact with support personnel. This fact was highlighted by Abteilung et al in their article.²

Considering all the above factors few corrective measures can be introduced in effective time utilization.

These are as follows:

1. Intense training of junior Gynecology and anaesthesia residents as well as those of seniors in newer techniques.
2. All the equipments such as various scopes, their accessories and operative instruments should be kept up-to-date.
3. All the electrical supports should be kept tested and ready.
4. Continuous stock-check and replenishment of required routine and emergency medicines should be done.
5. All the supportive devices should be in working condition.
6. And above all, the helping OT staff should be encouraged to work quickly and efficiently as the situation demands.

Similar views were reported by Marjamaa R et al in their article "Operating room management: why, how, and by whom?"³.

Finally, a simple quantitative method of estimating operating list duration for a series of operations leads to an algorithm that can potentially improve operating list pattern⁴. More of similar studies in our hospital can surely lead to better time management.

CONCLUSIONS

Time-motion study of Hysteroscopy procedure in the department of Obstetrics & Gynecology of SKNMC & GH was undertaken to appraise and correct factors leading to delay in various steps of the procedures.

Factors found were:

- 1) Equipment failure.
- 2) Patient factors.
- 3) Supporting staff problems.
- 4) Procedural difficulties.

Remedies suggested:

- 1) Properly maintained surgical instruments and anaesthesia equipments.
- 2) Properly maintained electrical devices.
- 3) Repeated stock-checks and replenishment of OT and procedural drugs.
- 4) Intense training of both gynecology and anaesthesiology personnel.
- 5) Encouragement of supportive OT staff for quick and timely action.

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