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Patients Operated By Female Surgeons Have Lower Risk-Adjusted Adverse Postoperative Outcomes

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Abstract

Surgery is the modality of treatment whereby injury, deformity or disease is managed by removal, repair or readjustment of the tissue or organs. One may have to incise and cut open the body cavity to remove or repair the diseased organ. Surgical branches attract the doctors right from their student life. It requires deep knowledge, surgical skill, decision power, and determined mind to handle the complications. In modern era it has been observed that gender ratio in the medical college admissions is shifting more towards female candidates compared to male. Few decades back gynaecology was the preferred branch of medicine for female doctors to pursue their further post graduate studies. In modern times with changing social scenario, we see female doctors in other surgical branches like ENT, ophthalmology, general surgery and even orthopaedics! As our institute is a teaching hospital to affiliated a medical college in outskirt of Baroda city draining vast surrounding peripheral areas and serves to provide free of cost maternal and child health services under various govt maternal and child health schemes, labour rate in our hospital whorls around 300 per month on an average. Unregistered and complicated emergency patients referred from peripheral referral units constitute a sizeable bulk of patients . On average 8 to 10 major and 10 to 12 minor surgeries are performed in our hospital. Post graduate admissions fetch good number of female doctors to the hospital for training. In view of good no of operable patients and a decent ratio of male and female doctors we were inspired to carry out this study.

In view of the changing trends a study was carried out at Dhiraj hospital to determine the surgeon's gender based post operative

CC License CC-BY-NC-SA 4.0	outcome of surgery in patients operated by male and female surgeons. It was observed that the patients operated by female surgeons had lower risk adjusted adverse post operative outcomes considering mortality, readmissions and complications. **Keywords.** Female surgeons, post operative outcome, mortality

INTRODUCTION

Surgical management of any diseased or injured not only brings spontaneous relief to the diseased from his suffering but also establishes surgeon asangel in eyes of patient as well as relatives. It also imparts sense of gratification to the surgeon of curing the patients. Success of surgery depends on knowledge, communication skill, clinical judgement andtechnical efficiency of the surgeon.[1] The acquisition and maintainance of the technical skill determines the short term post operative outcome of surgery by the surgeon.[2] The expertise in maintaining the technical skill makes surgeon stand out from other surgeons. Women and men practice medicine differently[3,4,5,6] In spite of all these goodness of surgery, complications form the major evil in surgery. The magnitude of complication may be from little serous discharge from the surgical site to fatality.The common complications we face during surgical management of the patients may be intra operative like excessive blood loss error in diagnosis and inadvertent injury to the neighbouring organs.Post operative complications will be in form of blood transfusion reactions, post op discharge from the surgical wound site, gaping of the wound and burst abdomen. Genitourinary fistula. incisional hernia, keloid formation on surgical scar, recurrence of thedisease or prolapse of the vaginal vault are the delayed late complications ofgynaecological surgery. Although complications are inevitable dark side of surgery, they can be kept to minimum by accurate skill in surgery, constantly updated medical knowledge,proper selection of patients and liberal use of available modern gazettes to confirm the diagnosis,using modern surgical instruments and gazettes. Continuously updating knowledge by attending CME, conferences and seminars will help surgeon in keeping the complications at minimum.

REVIEW OF LITERATURE

Although studies conducted under this title are few, they all suggest operative speed, variations in surgical technique and tendency to take risk as important factors for male surgeons ending up with more problems post operatively. Review of medical records of one million patients treated in Canada and Sweeden revealed that patients managed by female doctors had significantly better outcomes with fewercomplications in post operative period. Can it be attributable to their tendency to operate slowly and taking their own time for surgery. Christopher Wallis [1] study in mount Sinai hospital of Torrento analysedmedical complications, readmission to hospital and death rate after surgery in nearly 1.2 million pt. He reported 13.9% of patients managed by male doctors faced adverse post operative events compared to12.5% patients treated by female surgeons having post operative complications. DrMy blohm[7] from Stockholm reviewed patients who undergone gall bladder surgery in Karolinska institute. He concluded that patients operated by female doctors had fewer complications and shorter hospital stay.Prof Maartin Almquist[8] from Skane university of Sweeden after reviewing the surgery by female surgeons, noticed thatthey face less complications but take longer time for surgery reiterated that Navy seal mantra" slow is smooth and smoot is fast" also applies to surgery. Tsugawa et al[9 bmj] concluded that patients of US Medicare treated by female doctors had lower readmission rate as well as mortality at 30 days compared to patients treated by male doctors.The difference could be ascribed to female doctors having more patient centred approach.Surgical outcome mainly depends on technical component and so there is less reason toexpect difference in surgical outcome of patients operated by female and male doctors.

AIMS AND OBJECTIVES

To study the relationship between sex of the operating surgeon and post operative surgical outcome of patients undergoing common obstetrics and gynaecology surgery.

MATERIAL AND METHODS

After obtaining approval of the ethics committee, this retrospective analytical study was conducted amongst the patients operated in obstetrics and gynaecology dept of Dhiraj hospital and affiliated SBKS medical institute and research centre.

STUDY DESIGN: - RETROPROSPECTIVE ANALYTICAL STUDY
STUDY PERIOD: - From the date of approval by the Ethics committee for the periodMay 17 to May 23.
STUDY SOURCE: SBKS MEDICAL INSTITUTE AND RESEARCH CENTRE AND Dhiraj hospital, Pipariya, Vadodara, Gujrat.
SAMPLE SIZE: All the patients operated by consultants and resident doctors ofobgy dept of Dhiraj hospital consultants and resident doctors from May 2017 to May 2023 .

The operated patients were grouped in separate group depending upon the gender of the operating surgeon. Their case files were analysed for post operative ailments, complications, readmissions and mortality.

INCLUSION CRITERIA
- All planned surgeries carried out in obgy dept of Dhiraj hospital i.e. LSCS, hysterectomy (laproscopic ,abdominal as well as vaginal), reconstructive surgery .and miscellaneous surgeries.
- All patients undergoing primary surgery.
- Patients operated in the routine hours in stable hemodynamic condition.

EXCLUSION CRITERA
*All the patients having comorbidities which would influence post operative outcome
* patients being operated for recurrence
* patients operated jointly by surgeons of both sex.
*complicated patients operated in emergency.
*patients operated in critical condition.

PROFORMA
SR NO
Name of the patient
Age
Whether obst/ gynaec
Indication for surgery
Date and time of surgery
Sex of operating surgeon
Time taken for surgery
Intra operative
Excessive bleeding
Difficulty in opening abdomen
Inadvertent injury to intestine/ urinary bladder
Difficulty in achieving haemostasis
Immediate Post operative complaints
Severe pain yes/no
Excessive vomiting yes/no
Bleeding from operative site
Soakage of dressing
Any blood stained urine
Post operative shock
Post op usg
Repeat surgery
Post operative collapse
Post operative death

LATE POST OPERATIVE COMPLICATIONS
Discharge from wound
Gaping of surgical site wound
Burst abdomen
Genito urinary fistula
Intestinal obstruction
Incisional hermia

Keloid formation on scar
Divarication of recti

STUDY DESIGN: - RETROSPECTIVE ANALYTICAL
STUDY PERIOD: - May 2017 to May 2023 after approval by the Ethics committee.
STUDY SOURCE: Department of OBS & GYNEC, Dhiraj hospital, Pipariya, Vadodara, Gujrat.
SAMPLE SIZE: All the patients operated by consultants and resident doctors of obgyn dept of the Dhiraj Hospital during study period and fulfilling inclusion criteria were included in the study.

Material and method of study
After obtaining due permissions from competent authorities, records of the patients operated in obstetrics and gynaecology dept of Dhiraj hospital were retrieved from the record room. The case files of the patients operated in the of obstetrics and gynaecology dept fulfilling the inclusion criteria were analysed and the data were entered in the proforma sheet . The collected data was analysed at the end for the study period.

Observation and results
Atfter analysing the indoor patients records the data was analysed as under

TABLE 1
GENDER WISE DISTRIBUTION OF SURGEONS

Gender of the surgeon	No of operating surgeons	Consultant doctors	Resident doctors
Total	98	28	70
Male	47	13	34
Female	51	15	36

As seen from the above table the gender ratio of the operating surgeons was almost equal. Since ours is ateaching hospital allthe surgeries done by residents are jointly done along with consultants, now onwards all the surgeries by consultants and residents will be collectively mentioned under the head of male doctors or female doctors.

TABLE 2
AGE OF THE OPERATING SURGEON

	25 TO 40	41 TO 55	>55 YEARS
MALE	28	12	07
FEMALE	42	07	02

Majority of the surgeons were of the young age. only 9 surgeons were of the age near to the age of retirement. All were enthusiastic and physically fit to operate.

TABLE 3
NATURE WISE SURGERY

Total no	6131	Cases as per criteria	Male doctor	percentage	Female doctors	Percentage
obstetrics	3147	2831	1332	47.05%	1499	52.95%
Gynaec	2984	2686	1153	42.92%	1099	57.08%
			2485		2498	

TABLE 4
OBSTETRIC SURGERIES

TYPE	NO OF CASES	% of surgery	Male doctors	Percentge	Female doctors	PERCENTAGE
Caesarean section/ hyst	1977	69.83	949	48%	1028	52%
D & E AND CHECK	696	24.59%	313	45%	383	55%

CURRETAGE						
ENCIRCLAGE	158	05.58%	70	44.3%	88	55.7%
	2831		1332	47.0 %	1499	53 %

Caesarean section formed almost 70% of total surgery. D & E constituted 25 % Majority of them had indication for retained products of conception in case of incomplete abortion.

TABLE 5

GYNAEC SURGERIES

TOTAL	2686	Male dr	Female dr
ABD HYSTERCTOMY	1233	566 45,9 %	667 56%
Sling surgery	42	23 54.76%	19 54.1%
VAG HYST	1077	564 52.36%	513 47.62 %
D & C	267	110 41.19	157 58.81 %
Miscellaneous (Bartholin's cyst. cervivcal punch biopsy colpoclesis. vault suspension surgry	67	26 38.8 %	41 61.2 %

In genecology hysterectiomies were the main surgery. D& C ranking 2nd.

TABLE 6

Analyss of adverse ailments

	FEMALE DOCTORS	%	MALE DOCTORS	%
Difficulty in opening abdomen	15	0.97%	16	0.93%
Inadverant injury to bladder or intestine	07	0.45%	08	0.46%
Difficulty in achieving haemostasis satisfactorily	22	01.34%	30	01.75%

Intra operative difficulties encountered were nearly equal for both groups.Howeverthe issues were resolved and surgeries could be accomplished satisfactorily.

TABLE 7

Immediate Post operative complaints in first 24 hours

	Male Doctor	%	Female Doctor	%
SEVERE pain	373	15.00	325	13.00
Excessive vomitting	348	14.00	302	12.08
Bleeding fro mop site	224	09.00	199	07.96
haematuria	398	16.01	349	13.97
Post op shock	198	07.96	125	05.00
Post of usg	296	11.91	252	10.08
Re opening	125	05.03	87	03.48
Post op collapse	29	01.16	23	00.92
Post op death	18	00.72	15	00.60

As seen from the above table the post operative ailments were significantly higher in case of surgeries performed by the male doctors in comparison to surgeries by female doctors.

TABLE 8
LATE POST OPERATIVE COMPLICATIONS IN WARD

	Male doctor group	% of pt	Female doctors group	% of pt
Discharge from wound	536	21.56	487	19.49
Gaping of surgical site wound	212	08.53	197	7.88
Burst abdomen	22	0.88	18	0.72

Late complications related to the wound healing, although depending more on patient profile as well as aseptic precautions and antiseptic measures. They were also higher in patients operated by male doctors.

TABLE 9
LATE COMPLICATION PATIENTS AFTER DISCHARGE

	Male doctor group	% of pt	Female doctor group	% of pt
Genito urinary fistula	28	1.12	24	0.96
Intestinal obstruction	12	0.48	10	0.40
Incisional hernia	23	0.92	20	0.8
Keloid on scar	15	0.60	12	0.48S
Divarication of recti	26	1.04	18	0.72

Late complications also were reported a bit higher in patients operated by male doctors. These would definitely reflect the operative skill as well as accuracy of the surgeon.

TABLE 10
READMISSIONS.

	Total op	No of pt	%
Male dr	2485	48	1.93
Female dr	2498	46	1.84

Readmidssin rate was also marginally higher in male doctors group.

TABLE 11
POST OPERATIVE DEATHS (3 months)

	NO OF DEATH	%	NO	
MALE DR	12	0.248%		
FEMALE DR	10	0.40%		

DISCUSSION AND RESULTS

As seen from the above data it is evident that the post operative outcome in patients operated byfemale doctors was significantly better compared to the patients operated by male doctors. Out of the 5517patiens operated -14% of patients had one or more post operative ailment outcome. Male doctor group contributed 15.48 %while female group had 13.68 %. Multivariable adjusted rates of composite end point were higher among patients operated by male doctors compared to female doctors at 90 days.(15.48 % vs13.68%.) The results are comparable with the study of WallisCJD were he reported multi variable rate of13.9% vs 12.5%. and death rate of 2% in 90 days and 4.3% in one year.

CONCLUSION

From the above study it is clearly evident that the female surgeons score higher compared to male doctors. The factors influencing outcome could be accuracy while doing surgery punctuality for achieving haemostasis,better selection of patients and surgery without hurry.However this study doesn't claim

superiority of female surgeons over male surgeons because besides surgical skill, Interplayof many known and unknown factors play crucial role in determining thepost operative surgical outcome.

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