

Original Article

The Effect of Diabetes Mellitus on the Postoperative Period in Breast Cancer Patients — A Three Years Retrospective Study

Manjunath Byadigere¹, Harindranath H R², Nagashri Suresh Iyer³

Background : Breast cancer is the most common type of cancer amongst women. Amongst the many factors which affect the outcome of breast cancer surgeries is Diabetes Mellitus. Diabetes Mellitus is an ongoing problem Worldwide. It is a predictor for Postoperative complications in women who undergo surgical management for breast cancer.

Aims And Objectives : (1) To compare the rate of postoperative complications in Diabetic and non-diabetic patients undergoing breast cancer surgeries. (2) To compare the in hospital outcomes in diabetic and non diabetic patients. (3) To study the pre and Postoperative control of sugars in Diabetic patients undergoing breast cancer surgeries.

Methods : Data will be collected from the in patient files and the surgery case completion register in the Medical records department of hospitals attached to Bangalore Medical College and the data will be retrospectively scrutinized for a period of 3 years from 01/09/2018 to 30/08/2021. Patients diagnosed with breast cancer and planned for surgical management of the same were included in the study.

Results : A total of 100 breast cancer patients were studied. 34 were Diabetic of which 16 had uncontrolled sugars pre operatively. Out of which only 5 patients remained to have uncontrolled sugars Postoperatively. A total of 27 patients developed Postoperative complications. 13 were Diabetic of which 9 had uncontrolled sugars. Of the diabetic patients a total 27 had a drain duration of more than 7 days.

Conclusion : Diabetic women who undergo breast cancer surgeries at an increased risk of complications post operatively, more so if they have uncontrolled sugars. In hospital outcomes too are different in patients with Diabetes as in the duration of drain thereby the total in patient days were higher in patients with diabetes. Also patients with uncontrolled sugars saw an improvement in their sugars postoperatively.

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Key words : Breast Cancer, Diabetes Mellitus, Postoperative period.

Breast cancer is the most common type of cancer amongst women. It is also one of the major cause of death and morbidity Worldwide^{4,5}.

Surgical management like Breast Conservative Surgery and Mastectomy, are the mainstay of treatment of breast cancer alongside hormonal, chemotherapy and radiotherapy. These surgeries come along with a variety of complications associated with them. These complications can be infective and non infective thereby affecting the inpatient stay of the patient.

Diabetes is a leading cause of morbidity worldwide. Diabetes being a lifestyle disease and also a part of the Syndrome X, when associated with breast cancer can have a varying effects on the outcomes post operatively such as infective and non infective

Editor's Comment :

- Breast cancer is the most common cancer amongst women.
- Diabetes mellitus being a lifestyle disease has become a burden in the modern world.
- When these both unfortunately are present in an individual, the Postoperative period can be different from a non diabetic breast cancer patient.
- Higher morbidity is observed in diabetic patients.
- However these morbidities are lesser in patients with well controlled diabetes.

complications, duration of drain and duration of stay at the hospital. Also the diabetic control pre operatively plays a role in these associations. Also the breast cancer surgery in turn can have a beneficial effect on the control of sugars in the post operative period.

Objectives of the Study :

(1) To compare the rate of postoperative complications in Diabetic and non-diabetic patients undergoing breast cancer surgeries

(2) To compare the in hospital outcomes (drain duration, inpatient days, stage at presentation) in Diabetic and non-diabetic patients

Department of General Surgery, Bangalore Medical College and Research Institute, Karnataka 560002

¹MBBS, MS, Associate Professor

²MBBS, MS, Head of the Department

³MBBS, Postgraduate Trainee and Corresponding Author

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(3) To study the pre and postoperative control of sugars in Diabetic patients undergoing breast cancer surgeries.

MATERIALS AND METHODS

We performed a retrospective observational study by collecting data from the inpatient files and case completion registers in the Medical Records Department of Hospitals attached to Bangalore Medical College and the data was retrospectively scrutinized for a period of 3 years from 01/09/2018 to 30/08/2021

Inclusion criteria were set to identify the patients diagnosed with breast cancer who were undergoing surgical management. Then the data were analysed to identify the associated co morbidities, days of stay at hospital, stage at presentation, drain duration, inpatient days, Postoperative complications and pre and post surgical control of sugars in case of Diabetic patients. The results were compiled and analysed and compared with regard to patients with and without Diabetes

The study was approved by our Institute Ethics Committee and 100 people >18 years of age, who had undergone surgery for breast cancer were included in the study

A GRBS of >140 was considered as uncontrolled sugars. The inpatient days were divided into less than or equal to 15 days. Drain duration was analysed as less than or equal to 7 days. The Postoperative complications were divided into infectious complications like surgical site infections and non infectious complications like seroma and flap necrosis and compared with the Diabetic and non-diabetic counterparts.

Statistical analysis :

The data collected was entered into excel sheet and was analysed using SPSS 27.0 Grad pack. The data regarding the data thus compiled was statistically represented using mean, Standard Deviation, frequency and percentage using chi square test. The variables included in the study were age, comorbidities like Hypertension, Diabetes and Hypothyroidism, complications like seroma, Flap necrosis and Surgical Site Infections (SSI), drain duration, inpatient days, stage at presentation and recurrence. Also the diabetic control was compared pre-operatively and post operatively. A p value of <0.05 was considered to be significant.

RESULTS

A total of 100 breast cancer patients who had underwent Mastectomy in the study period were

Age	Frequency	Percent
< or equal to 40 years	18	18.0
40-59 years	54	54.0
60-79 years	27	27.0
> or equal to 80	1	1.0
Total	100	100.0

	Diabetes	Hypertension	Hypothyroidism
Present	34	26	2
Absent	66	74	98
Total	100	100	100

UNCONTROLLED SUGARS

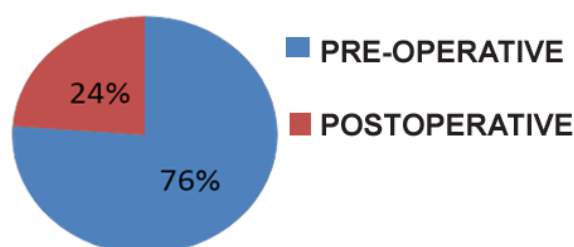


Fig 1 — Presence of uncontrolled sugars

	Complications
Non Diabetic	14
Controlled Dm	4
Uncontrolled Dm	9

DRAIN DURATION IN DIABETIC PATIENTS

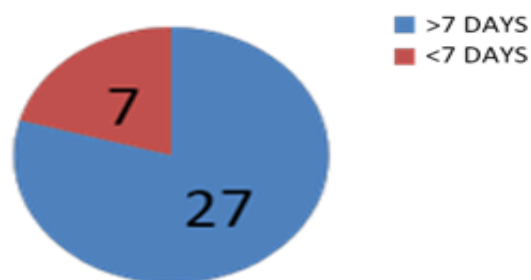


Fig 2 — Drain duration in diabetic patients

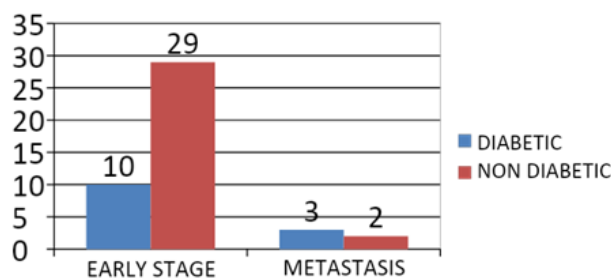


Fig 3 — Stage at presentation

Complications	Non Diabetic	Diabetic
Flap Necrosis	6	3
Seroma	8	9
SSI	0	1

studied and analysed (Tables 1-4 & Figs 1-3).

With the inclusion criteria being more than 18 years, patients studied belonged to ages between 32 years and 87 years, Mean age being 50 years

Of the total patients, 34 patients had Diabetes, 26 were Hypertensive and 2 had Hypothyroidism.

Of the Diabetic patients 16 patients had uncontrolled sugars pre-operatively whereas only 5 patients remained to have uncontrolled sugars post operatively

A total of 27 patients developed Post-operative complications like Seroma, Flap necrosis, Surgical site Infections of which 13 were diabetic. 9 of these 13 patients had uncontrolled sugars pre-operatively. Relationship between Diabetes and Complications was significant ($p = 0.020$); $p < 0.05$ is significant

Of the Diabetic patients 17 had a inpatient stay of >15 days and 17 had an in patient stay of <15 days.

Of the Diabetic patients a total 27 had Drain duration of more than 7 days of which 9 patients had uncontrolled pre-operative sugars. Diabetes and Drain duration was significant ($p=0.003$); $p < 0.05$ is significant

39 patients presented at an early stage of which 10 were Diabetic. 5 patients presented with metastasis of which 3 were Diabetic.

And only 1 patient presented with recurrent Carcinoma breast who was non Diabetic.

DISCUSSION^{2,3}

Occurring in 1 out of 4 women breast cancer is most common in Indian women⁶.

Diabetic women who undergo breast cancer surgeries at an increased risk of complications post operatively, more so if they have uncontrolled sugars. In hospital outcomes too are different in patients with Diabetes as compared to their non-diabetic counterparts.

Patients with Diabetes usually have other comorbidities. In our study they were associated with other comorbidities like Hypertension and Hypothyroidism, thus adding on to the morbidity. Similar results were seen in the study conducted by Lopez-de-Andres A, *et al*¹

The Postoperative complications in patients with

uncontrolled Diabetes were significantly higher than in those with non diabetic patients. Also our study shows no significant increase in the risk of complications in diabetic patients whose sugar levels were under control. Thus signifying the importance of the maintenance of good Diabetic Control. Similar results showing that both infective and non infective complications were higher in diabetic patients was seen in the study by Lopez-de-Andres A *et al*¹

The duration of Drain insitu too was significantly higher in pre-operatively uncontrolled Diabetes patients.

But the relation of stage at presentation, duration of stay at hospital and recurrence with diabetes status of the patient showed no significant relation in our study.

Hence the presence of Diabetes acts as an additional factor to the morbidity in post mastectomy patients.

CONCLUSION

Through this study we conclude that diabetic patients with breast cancer usually have other associated comorbidities and also have an increased risk of Postoperative complications, more so if the diabetes is not well controlled. Thus having other significant in hospital stay outcomes compared to their non-diabetic counterparts.

REFERENCES

- 1 Lopez-de-Andres A, Jimenez-Trujillo I, Hernandez-Barrera V, *et al* — Association of type 2 diabetes with in hospital complications among women undergoing breast cancer surgical procedures. A retrospective study using the Spanish National Hospital Discharge Database, 2013-2014. *BMJ Open* 2017;7:e017676. doi:10.1136/bmjopen-2017-017676
- 2 Ferroni P, Riondino S, Buonoka O, Palmirotta R, Guadagni F, Roselli M — 2015. Type 2 Diabetes and Breast cancer: The interplay between Impaired Glucose metabolism and Oxidant stress. *Oxidative Medicine and Cellular Longevity* 2015; pp1-10.
- 3 Larsson S, Mantzoros C, Wolk A — Diabetes mellitus and risk of breast cancer: A meta-analysis. *International journal of Cancer* 2007; **121**(4): pp.856-62.
- 4 Peairs K, Barone B, Snyder C, Yeh H, Stein K, Derr R, Brancati F, Wolff A — Diabetes mellitus and Breast cancer outcomes: A systematic review and meta-analysis. *Journal of clinical oncology* 2011; **29**(1): pp.40-6.
- 5 Sainsbury R — The Breast. Bailey and Love's short practice of surgery 2018; **27**: 871-8.
- 6 Panda S, Chakrabarti S, Chakraborty J, Bhattacharyya R — Correlation between Her2Neu status with molecular classification, Cyclin D1 status and Ki67 expression in intraductal carcinoma of the breast. *Journal of Indian Medical Association* 2021; **119**(4): 29-33.