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INTRODUCTION

The number of immediate breast reconstructions after complete mastectomy has increased this past 10 years, even when post mastectomy radiation therapy is planned. But PMRT after immediate breast reconstruction can be associated with some complications and adverse events.

AIM

Immediate breast reconstruction (IBR) yields better cosmetic results and reduce psychological distress than delayed (DBR). Literature data showed better local cosmesis after reconstruction autologous flaps than prosthesis. Our aim is to compare cosmetic results and quality of life (QoL) after PMRT delivered either after IBR or DBR with DIEP flap.

METHOD

We reviewed files of 99 patients (100 DIEPs) treated in our department from January 2000 to December 2019. Patients were divided into 2 groups IBR (n=22) versus DBR (n=78) followed by PMRT.

All the patients had their DIEP flap by the same surgical team.

All patients had cosmetic evaluation using Harvard/ROG cosmesis grading scale.

Fifty percent (32 in IBR and 14 in DBR group) of the patients responded to the QoL evaluation using auto questionnaires and BREAST-Q to evaluate breast specific HRQoL and satisfaction.

Factor	Group	Med N (%)	RT followed by DIEP	IBR with DIEP followed by RT
N		100	78	22
Age at diagnosis		48 (28-71)	48 (28-71)	48 (31-68)
Smoking	No	83 (83)	68 (87.2)	20 (90.9)
	Yes	17 (17)	10 (12.8)	2 (2.6)
Diabetes	No	94 (94)	75 (96.1)	19 (86.4)
	Yes	6 (6)	3 (3.9)	3 (13.6)
T	Cis or 1-2	57 (57)	43 (55.1)	14 (63.6)
	3-4	21 (21)	13 (16.7)	8 (36.4)
	Unknown	22 (22)	22 (28.2)	0 (0)
N	Negative	38 (38)	26 (33.3)	12 (54.5)
	Positive	46 (46)	36 (46.2)	10 (45.5)
	Unknown	16 (16)	16 (20.5)	0 (0)
Chemotherapy	No	14 (14)	8 (10.3)	6 (27.3)
	Yes	86 (86)	70 (89.7)	16 (72.7)
Total Dose of radiation	50Gy	52 (52)	33 (42.3)	19 (86.4)
	> 50Gy	7 (7)	5 (6.4)	2 (9)
	Unknown	41 (41)	40 (51.3)	1 (4.5)
Irradiation of the internal mammary chain	No	57 (57)	47 (60.3)	10 (45.5)
	Yes	43 (43)	31 (39.7)	12 (54.5)
Irradiation of the infra / supra clavicular nodes	No	33 (33)	30 (38.5)	3 (13.6)
	Yes	67 (67)	48 (61.5)	19 (86.4)
Complications	N	15 (15)	11 (14.1)	4 (18.2)
	DIEP necrosis	8 (8)	6 (7.7)	2 (9)
	Hematoma	1 (1)	1 (1.3)	0 (0)
	Other	6 (6)	4 (5.1)	2 (9)
Death during treatment	No	97 (97)	76 (97.4)	21 (95.4)
	Yes	3 (3)	2 (2.6)	1 (4.5)

Table 1. Population characteristics

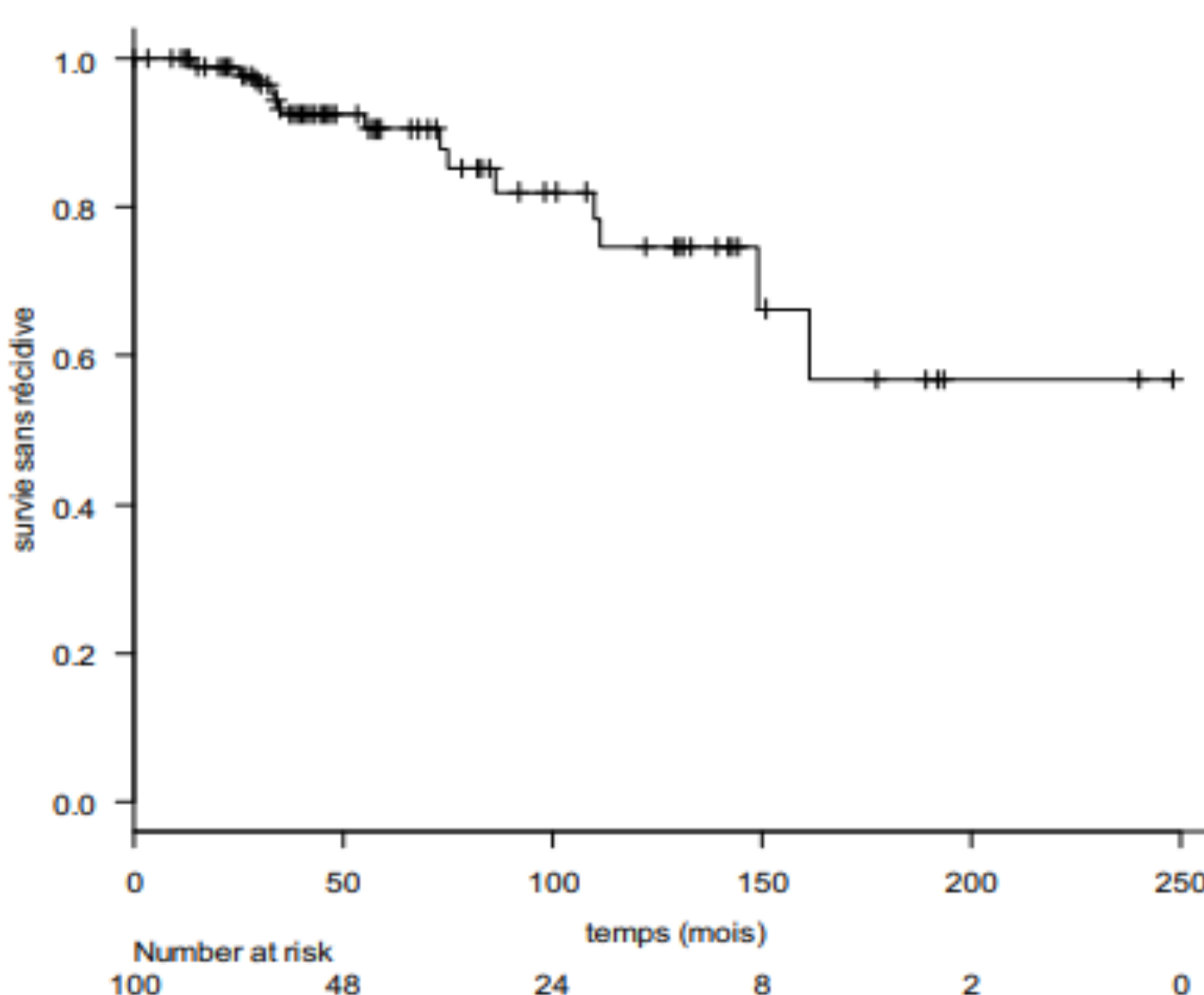


Figure 1. Relapse free survival of the cohort

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RESULTS

Median follow-up was 56 months. Median age of the patients was 48 (28-71). In terms of disease stage: T1-2 (52%), N0 (38%). 86% of the patients had chemotherapy either in neo-adjuvant (26%) or adjuvant (60%) settings. Radiation therapy (RT) delivered a total dose ranged between 45Gy and 50Gy using 1.8-2.5Gy/per fraction. Supra-clavicular and internal mammary chain irradiation was performed in 67% and 33% of the patients respectively. After surgery, 15% had post-operative complications such as DIEP necrosis (n=8) that delayed RT delivery. Among the 99 patients, 3 died from metastatic evolution and were not included in the cosmetic and QoL analyses.

Local recurrence rate was slightly higher after DBR (12.5%) as compared to IBR (3.8%). Loco-regional and metastatic recurrence rates were 4.5% and 4.5% after IBR versus 1.3% and 9% after DBR (p=NS). Disease free and overall survival were 88% and 98% at 5y and 66% and 96% at 10y. Good-to-excellent results were observed in 57% in the IBR vs 67% in the DBR (p=0.92).

There was no impact of previous chemotherapy (p=0.21), tobacco use at diagnosis (p=0.27), diabetes (p=0.86), RT timing (p=0.53) and endocrine therapy administration (p=0.67). QoL was evaluated with the BREAST-Q self-evaluation for 5 post operative items: psycho-social, physical, sexual well-being and satisfaction with breast and global cosmetic results. Out of the 99 patients, 46% had responded to the QoL evaluation. We found no statistical difference between the two groups for all the BREAST-Q evaluation items

Factor	Group	RT followed by DIEP	IBR with DIEP followed by RT	P value
N (%)		32	14	
Harvard Scale	Good	12 (38.7)	5 (35.7)	0.926
	Excellent	9 (29.0)	3 (21.4)	
	Fair	8 (25.8)	5 (35.7)	
	Poor	2 (6.5)	1 (7.1)	
Physical Well being		18.35 (17.04)	21.07 (22.07)	0.654
Social Well being		65.10 (21.72)	72.71 (17.91)	0.258
Satisfaction with breast		51.13 (14.59)	52.07 (10.06)	0.828
Satisfaction with surgery		62.13 (22.64)	53.07 (23.68)	0.227
Sexual Well being		44,29 (30.70)	33.36 (23.13)	0.242

Table 2. Cosmetic results and quality of life evaluation

Factor	OR	IC 95%	P value
Chemotherapy	0.392	0.01-1.72	0.214
Active smoking	2.58	0.47-14.20	0.276
RT after breast reconstruction	1.64	0.35-7.78	0.532
Hormonotherapy	1.05	0.20-5.58	0.952
Diabetes	0.796	0.05-11.40	0.867

Table 3. Predictive factors for Fair and Poor cosmetic results

Factor	Group	RT followed by DIEP	IBR with DIEP followed by RT	P value
Complications		78 (%)	22 (%)	
	Hematoma	1 (1.3)	0 (0)	
	Necrosis	6 (7.7)	2 (9.0)	
	Thrombosis	2 (2.6)	0 (0)	
	Other	2 (2.6)	2 (9.0)	
Total	11 (14.1)	4 (5.1)	0.672	
Relapses	Loco-regional	1 (1.3)	1 (4.5)	
	Contralateral	4 (5.1)	1 (4.5)	
	metastatic	7 (9.0)	1 (4.5)	
Total	12 (15.4)	3 (3.8)	0.692	
DIEP failure	Yes	3 (3.8)	0 (0)	
	No	75 (96.1)	22 (100)	
Death all causes	Yes	2 (2.6)	1 (4.5)	0,0395
	No	73 (93.6)	0 (0)	

Table 4. Post treatment outcomes on global population

CONCLUSION

Our study, showed that cosmetic results and QoL were not different in the two groups. In the literature, immediate or delayed breast reconstruction with autologous flaps performed by expert teams allow systematically better cosmetic outcome and increase rates of fat necrosis after radiotherapy.

