Annals of Medicine and Surgery 9 (2016) 41–49

Contents lists available at ScienceDirect

Annals of Medicine and Surgery

journal homepage: www.annalsjournal.com

Case report

The surgical management of male breast cancer: Time for an easy access national reporting database?

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HIGHLIGHTS

- Male breast cancer is extremely rare with an incidence of less than 1% of all breast cancers.
- We report a series of seven cases of male breast cancer encountered over three years, evaluating patient demographics, treatment and outcomes.
- Review of these patients highlighted a lack of consensus on the optimal surgical strategy for their management.
- The paper discusses the plausible options for surgical reconstruction of male breast cancer defects.
- The authors advocate an easy access national reporting database to improve large scale data collection and surgical intervention.

ARTICLE INFO

Article history:
Received 4 April 2016
Received in revised form
6 June 2016
Accepted 7 June 2016

Keywords:
Male
Breast
Cancer
Breast reconstruction

ABSTRACT

Introduction: Male breast cancer is extremely rare with an incidence of less than 1% of all breast cancers. Literature reports a peak of incidence at roughly 71 years of age. Management currently follows the same clinical pathways as female breast cancer as a general rule.

Methods: A retrospective search for all patients who were referred and diagnosed with male breast cancer at our centre was undertaken. Patients notes were then explored for demographics, histological staging, multidisciplinary team meeting outcome and treatment.

A literature search including the search terms 'Male Breast Cancer AND Surgery' or 'Male Breast Cancer AND Experience' were used. Non English language articles, or those without abstracts were excluded.

Results: Seven patients were reviewed over 3 years (2006–2009). Mean agea was 69 years and mean lesion size was 15 mm. Histology was invasive ductal carcinoma for all patients. All patients were ER receptor positive. Two patients were HER2 positive. Five patients were offered mastectomy. One patient refused treatment. In follow up at 36 months there were 3 recurrences. 1 patient was lost to follow up. There were 3 mortalities.

The literature search identified 72 articles. Articles were subdivided into those that discussed the surgical management of male breast cancer (n = 8), articles that discussed male breast cancer as podium presentations or posters with no full text article publication (n = 13) and finally full text publications of case experience of male breast cancer (n = 21).

Discussion: We report a series of seven cases of male breast cancer encountered over three years, evaluating patient demographics as well as treatment and outcomes. In our series patients were managed with mastectomy. New evidence is questioning the role of mastectomy against breast conserving surgery in male patients. Furthermore there is a lack of reporting infrastructure for national data capture of the benefits of surgical modalities. Literature review highlights the varied clinical experience between units that remains reported as podium presentation but not published. The establishment of an online international reporting registry would allow for efficient analysis of surgical

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http://dx.doi.org/10.1016/j.amsu.2016.06.001

outcomes to improve patient care from smaller single centres. This would facilitate large scale meta analysis by larger academic surgical centres.

1. Introduction

Male breast cancer represents around 1% of all breast cancers worldwide and evidence shows that it is on the rise [1,2]. The rarity of male breast cancer makes conducting a prospective trial difficult but not impossible. Progress in this area has been made with collaborations between Europe and north America to launch the EORPT-BIG-NABGS prospective trial on male breast cancer. The pitfall of this paucity of male focused research and outcome data is a lack of tailored treatment regimes. This is as a result of several confounding factors, namely the low incidence, the lack of coordinate reporting of new cases and outcomes. The focus of recent male breast cancer research has been in understanding the importance of molecular subtyping in outcomes. Furthermore data from metastatic male breast cancer has supported the practice of utilizing female protocols to treat male patients.

Juxtaposed against the research into the hormonal and genetic interplay in male breast cancer, there is a lack of surgical outcome data for this patient group. Surgical management traditionally involves the use of a radical mastectomy to aggressively en bloc tumour resection. Despite the improvements in our understanding of the biohormonal markers of male breast cancer, little has changed or been added to the surgical armantarium. The aim of this case series is to review our centres 7 case experience of male breast cancer and to discuss the potential reasons behind a lack of surgical evolution in this disease. Finally we propose a solution to improve the change of this surgical change.

2. Methods

A retrospective review was conducted over a 3 year period of hospital records for patients diagnosed and treated at our centre for Male breast cancer. Patient's notes were reviewed for demographics, histological staging, multidisciplinary team meeting outcome and treatment.

A literature review was conducted to search for all presented and published data on the surgical management of male breast cancer and comparative single centre experience. Search terms ‘Male Breast Cancer AND Experience’ or Male Breast Cancer AND Surgery’ were used. Included articles for review were those that presented case experience of male breast cancer or discussed its surgical management. Podium presentations or posters were included. Publications were tabulated and reviewed. Articles that concerned biohormonal investigation of male breast cancer, adjuvant therapy treatment were excluded from further review or non English language were excluded.

3. Results

3.1. Case series

Our unit reviewed a total of 7 cases over a three-year period (2006–2009) of which 4 were diagnosed as male breast cancer. The mean age of our population was 69 years with a range of 47–93 years. 2 patients had gynaecomastia prior to diagnosis. 5 patients (71%) presented with a lump in the subareolar region, whilst 2 patients (29%) presented with an ulcer on the areola that was clinically suspicious of skin cancer and referred to dermatology for formal biopsy and diagnosis. One patient's breast lesion was diagnosed on immunohistochemistry as a prostate metastatic secondary. 4 patients had their lesion located on the right breast, whilst 3 patients presented on the left breast. Two patients (29%) had previous malignant disease other than breast cancer prior to presentation; one had previous bladder cancer, whilst another had a previous prostate primary. Table 1 highlights the outcomes of these patients.

The mean lesion size on histological examination was 15 mm. All histology (100%) showed invasive ductal carcinoma, of which only 1 patient had vascular invasion. All patients (100%) were ER receptor positive, whilst 2 patients (29%) were HER2 positive. Our histopathology department did not routinely test for progesterone receptor status, and this was not documented in the pathology records. One patient was CK7 negative, whilst the remainders were CK7 positive (86%). Table 2 summarizes these histological findings.

Mortality in our group was three (43%), of which 1 refused treatment. One patient was referred to another unit due to geography. 5 patients were offered simple mastectomy with sentinel lymph node biopsy. Three patients were offered axillary node clearance for positive lymph nodes of which one declined. 1 patient received no treatments (on his request) as mentioned. 1 patient received primary hormonal treatment only (medically unfit). The chemotherapy regime in our unit was 6 cycles of Cyclophosphamide, 5 Flurouracil and Methotrexate. One patient received a cycle of epirubacin to augment his chemotherapy treatment. One patient received radiotherapy. All patients were advised of Tamoxifen tablets for 5 years, whilst the two patients with Her-2 positive histochemistry were offered Herceptin therapy.

Treatment outcomes were varied; patients were followed up for 36 months during which one patient was lost to follow-up due to desire to be referred to another unit. 3 patients had no recurrence during follow-up; two patients had local spread and one had spinal metastases. Three patients died of their disease state.

3.2. Literature review

Literature search yielded 72 results. The results were subdivided into three cohorts. The first was conference abstracts for posters or podium presentations. Thirteen abstracts were reviewed that discussed single or multi centre experience of male breast cancer (Table 3). The largest case series in this group was 13,457 patients from the US National Cancer Data Base. The smallest groups were of 16 patients. The second group was articles that direction discussed the surgical management or published case experience of surgical techniques for male breast cancer (Table 4). Eight articles were included in this group. The largest cohort in this group reviewed the poor compliance and outcomes of lumpectomy with adjuvant therapy and partial mastectomy in 6039 male patients. The third group reviewed full text case experience publications, of which 21 were available for review (Table 5). This reflected 1390 patients in total. The largest cohort in this group was 244 patients, The mean number of patients presented in publication was 66 patients per publication. Mean age for this group was 55.5 years. Mean 5 – year overall survival was 51.44%.

Table 1
Patient demographics, treatment pathway and outcomes. ANC – Axillary Node Clearance (+ = Yes, – = No). Tx – Treatment. F/U – Follow Up.

Patient	1	2	3	4	5	6	7
Presentation	Lump in sub areolar	Hard focal lump, inner areola.	Red Crusted plaque over nipple and areola destruction.	Right breast lump	Right Breast Lump	Lump inch or two from Lateral left areola	
Gynaecomastia	No	Yes	No	No	No	Yes	No
Treatment	Mastectomy, Chemotherapy, Tamoxifen	Nil	Primary Hormonal Therapy Tx	Offered Mastectomy + ANC - Declined Mastectomy + ANC.	Mastectomy, SLNB, LN + Ve, ANC Chemo, Tamoxifen	Mastectomy Chemotherapy Radiotherapy Herceptin Tamoxifen	Mastectomy, SNLB & LN + VE & ANC, Chemotherapy
Follow Up	Referred on. Note CK7 Negative (Unusual)	Immunohistochemistry later revealed this was prostate Metastasis	Palliative	Recurrence lower pole of right nipple. Bone Metastasis T12	2 Years F/U Clear. On Tamoxifen	2 Years. No recurrence	2 Years No recurrence. On Tamoxifen
Outcome	Alive	Deceased	Alive	Alive	Alive	Alive	Alive

Table 2
Histochemistry of male breast cancer lesions for patients. Gene Amp – Gene Amplification.

Patient	1	2	3	4	5	6	7
Age	77	80	93	47	63	53	75
Grade	2	2	3	3	1	2	3
Side	Right	Left	Right	Left	Right	Left	Right
Invasion	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Type	Ductal	Ductal	Ductal	Ductal	Ductal	Ductal	Ductal
Vascular invasion	No	No	No	No	No	No	Yes
Size	11 mm		11mm Deep Hard Mass	15mm	9mm	22mm	22mm
ER status	Positive	Positive	Positive	Positive	Positive	Positive	Positive
HER status	Negative	Negative	Negative	Negative	? HER2 +ve Gene Amp –ve, immunhistochemistry stain 2 + ve	Positive	Negative

4. Discussion

This data highlights the experience of a small oncoplastic breast units experience with locally treating male cancer over 3 years. It demonstrates the low incidence of male breast cancer presenting to loco-regional centres. These results demonstrate the need for a national and international reporting mechanism in order to collate large cohorts of data in order to improve understanding and outcomes. Our study found 100% of the patients in the case series were oestrogen-receptor (ER) positive; this significant correlation has also been widely documented [1,2], alongside the paucity of triple-negative male breast cancer and on average 5% reported rate of HER2-positive cancers [3]. Our study also found that 100% of the patients had invasive ductal carcinoma, consistent with widespread evidence of a low rate of in-situ disease, estimated at 11% [2,4,5]. The propensity to present as an invasive ductal carcinoma with estrogen positive receptor status correlates with the findings of our literature review. (Tables 3 and 5).

Compared to the literature our case experience is relatively small. It size correlates with other published case series from local or regional centres who treated male breast cancer. Our cohort was predominately grade 2 lesions less than 2 cm in diameter with all cases ER positive. This correlates with previously published case series. Review of the literature identifies that the majority of published experiences come from regional or national patient series (Tables 3 and 5). Datasets presented as posters or presentations appeared to have a narrower range of patient sizes (Table 3). The largest cohort found in the literature was 13,000 patients, which had the lowest rate of surgical treatment, at 33% [6]. This was the lowest rate amongst the cohorts presented at conference. The progression towards breast conserving surgery cannot be seen in these series where the rate of modified radical mastectomy remained at 96.80% in a series from 2014.

Whilst international collaborations are underway to undertake large scale prospective data collection on male breast cancer, more needs to be done to allow small centres to document their experience. This would facilitate the meta-analysis by larger academic centres. The Helsinki declaration outlines the need for research reporting in order to facilitate transparency and outcome reporting. Despite the Helsinki declaration, presenters of abstracts at international meetings are not obliged to record their data into a data registry. The online research registry is one such tool for the registration of clinical patient trials for all disciplines. The significance of small centres experience would be magnified if centres could bank their clinical experience data in a registry for further analysis. Such a platform has been trialled by Orthopaedic surgeons who used a hub and spoke system to conduct a national hip arthroplasty audit [7]. Encouraging local hospitals to collate their case outcomes in a preset excel spreadsheet, the hub centre (Oxford University) could analyse each departments data individually and compare it both to other centres and the national means. This technique has also been trialled for national audit and clinical trials in reconstructive surgery (RSTN) [8]. The success and robustness of regional data input into national databases for prospective analysis has also been demonstrated in the orthopaedic implant registry [9] and the vascular network database [10]. In both theses examples it has enabled surgical outcome data and an improvement in service delivery regionally.

The international collaboration between The EORTC [11], Breast International Group (BIG), North American Breast Cancer Groups (NABCG), Borstkanker Onderzoeksgroup Nederland, Ireland Cooperative Oncology Research Group, Schweizerisches Arbeitsgemeinschaft Klin. Krebsforschung, and Swedish Association of Breast Oncologists has already facilitated a global retrospective data

Table 3
Male breast cancer experience presented at international conferences.

	Author	Year	Journal/Meeting	Patients	Age	Histo	Hormone status	5YS – Overall survival	Surgery	Mastect
1	Kaushik (1)	2012	Male Breast Cancer – University Hospitals of Leicester Experience Male Breast Cancer – University Hospitals of Leicester Experience	57	71.5	Invasive ductal carcinoma	97.60% ER +	55.60%	41	38
2	Sedighi (2)	2014	Clinicopathologic characteristics of male breast cancer: A report of 21 cases at a radiotherapy centre in hamadan, Iran	21	49.2	Invasive ductal	76.1% ER +	NA	NA	NA
3	Stevens (3)	2012	Efficacy of Aromatase Inhibitors in Male Breast Cancer n a Single Centre Experience	64	NA	NA	NA	NA	NA	NA
4	Serarslan (4)	2015	Male Breast Cancer: 20 Years Experience of a Tertiary Hospital from the Middle Black Sea Region of Turkey	16	59.8	Infiltrative ductal ca	93.80% ER +	68%	62%	NA
5	Calil (5)	2014	Male breast cancer: Epidemiological study in patients attended in three academic hospitals in São Paulo	35	35	Invasive ductal carcinoma	88.50% ER +	78.30%	96.80%	96.90%
6	Mueller (6)	2010	Male Breast Cancer - 25 Years Single Institution Experience	61	62	NA	NA	66%	41 patients MRM.	NA
7	Ghiotto (7)	2005	Male breast cancer: our experience from 1990 to 2004	48	60	87.50%	75% of ER +/PR +	NA	97%	97% - mastectomy, 1 conservative surgery
8	Walsh (8)	2005	Adjuvant chemotherapy in stage II node positive male breast cancer.	31	61	NA	74% ER +, 61% PR +	NA	100%	NA
9	Giordano (9)	2003	Male Breast Cancer: The MD Anderson experience.	156	59		85% ER +, 71% PR +	86%	NA	NA
10	Polo (10)	2001	Long term outcome of male breast cancer. A single institution experience	21	65	19pts infiltrative ductal ca	NA	36%	NA	NA
11	Mohler (11)	1997	Treatment and Prognosis of Male breast cancer: the Heidelberg experience	16	55	14/16 invasive ductal ca%	64% ER 82% PR	NA	MRM in all. 9/15 Axillary lymphonodectomy, 1 pt bilateral MBC	9/15 Axillary lymphonodectomy, 1 pt bilateral MBC
12	Greif (12)	2013	Gender Differences in Breast Cancer: Analysis of 13,000 Male Breast Cancers From the National Cancer Data Base	13,457	NA		ER 88.3%, PR 76.8	74%	33% partial mastectomy	
13	Kwong (13)	2013	The American society of Breast surgeons	142	64.87			94.5% ER +, 84.8 PR +, 60.5 HER2 +	73.10%	76.1% mastectomy

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Table 4
Presentations or publications discussing the surgical management of male breast cancer.

	Author	Title	Year	Journal/Meeting	Pts	5YS - overall	Surgery	WLE or lumpectomy
1	Nguyen (1)	Demand for breast-conserving surgery among male breast cancer patients	2012	The American Society of Breast Surgeons	9	NA	4 patients requested breast conserving surgery.	
2	Lanitis (2)	Breast conserving surgery with preservation fo the nipple areola complex as a feasible and safe approach in male breast cancer: a case report	2008	Journal of medical case reports	1		Breast conserving surgery with axillary clearance, hormone therapy and radiotherapy, chemo.	
3	Uematsu (3)	Two-step approach for the operation of male breast cancer: Report of a case at high risk for surgery	1998	Kobe Journal of Medical Sciences	1		Simple mastectomy under LA then 1 month later a radical mastectomy for breast cancer.	
4	Treves (4)	the treatment of cancer, especially inoperable cancer of the male breast by ablative surgery (orchiectomy, adrenalectomy and hyphysectomy and hormone therapy (oestrogens and corticosteroids). An analysis of 42 patients	1959	Cancer	162	NA	Mastectomy, orchiectomy, adrenelectomy.	
5	Zaenger (5)	Mastectomy vs Breast Conservation for Early-Stage Male Breast Cancer: A Comparison of Oncologic Outcomes - vs breast conservation for early stage male breast cancer: A comparison of oncologic outcomes.	2016	Oncology	1777	MRM 97.3, BCT 100%	83% SM or MRM, 17% BCS, 46% receive PORT to complete tx.	
6	lanitis (2)	Breast conserving surgery with preservation of the nipple-areola complex as a feasible and safe approach in male breast cancer: a case report.	2008	Journal of Medical Case Reports	1 case			
7	Cloyd (6)	Poor compliance with breast cancer treatment guidelines in men undergoing breast-conserving surgery	2013	Breast Cancer Research and Treatment	6039	66.10%	77.80%	59.2% lumpectomy, 39.4% nodal positive
8	Cloyd (7)	Outcomes of Partial mastectomy in male breast cancer patients: analysis of SEER, 1983–2009	2013	Ann Surg Oncol	4707 + 727 (Mastect/Lump)	87.3% lumpectomy, 87.7% Mastectomy, overall survival 66 (lumpectomy)%, 70.1 mastectomy	86.80%	13.20%
9	Al-Kalla (8)	Breast total male breast reconstruction with fat grafting.	2007	Breast	7	6 pts SNLB, 5 Axillary node clearance, 7 Lumpectomy/Wide Excision	NA	NA
	Golshan M (9)	Breast conservation for male breast carcinoma. Breast	2015	PRS Global Open	1	SNLB −ve, Mastectomy	NA	NA

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Table 5
Published full text articles discussing case experience of male breast cancer.

Author	Title	Year	Journal	Pts	Age	Histo	Hormone status	5YS - overall	Surgery	Mastect	WLE or lumpectomy
Shah P (1)	Clinicopathological study of male breast carcinoma: 24 years of experience	2009	Ann Saudi Med. 2009 Jul–Aug; 29 (4): 288–293.	32	NA						
Pemmaraju N (2)	Retrospective review of male breast cancer patients: analysis of tamoxifen-related side-effects	2011	Ann Oncol (2011)	126	61	54.7% Stage II	97%	NA	NA	NA	NA
Eldin A Elgohary S (3)	Male Breast Cancer; Experience with 6 cases	2010	2010; 8 (10) Nature and Science	6	60	All invasive ductal carcinomas	71.40%	NA - tx failure in 1 pt at 6 months.	5/6 Modified radical mastectomy		NA
Rai B (4)	Breast cancer in males: A PGIMER experience	2005	J Cancer Res Ther - March 2005 - vol 1 – Issue 1	30	57.13	Invasive ductal ca n = 28		40%	28	25	3
Soliman (5)	A retrospective analysis of survival and prognotstic factors of male breast cancer from a single centre	2014	BMC Cancer	69	58	invasive ductal	n = 29	46.60%	All underwent modified radical mastectomy with axillary lymph node dissection	NA	NA
Ahmed (6)	Management and outcomes of male breast cancer in Zaria, Nigeria	2012	International journal of breast cancer 2012	57	59	Invasive ductal ca 88%	57 - 100%	22.80%	49		
Yildirim (7)	Male breast cancer: 22 year experience	1998	European Journal of Surgical Oncology 24 6 548-552	121	60	87.6% invasive ductal ca.	NA	73%	121	96	25
Ngoo (8)	Male breast cancer: experience from a malaysian tertiary centre	2009	Singore Med J 50 (5) 519	6	64.5	5/6 infiltrative ductal ca	06-Jun	NA	66.7% total mastectomy		NA
Masci (9)	Clinicopathological and immunohistocheimcal characteristics in male breast cancer: a retrospective case series.	2015	Oncologist Jun2015 vol 20. 6 586-592	97	65	All invasive ductal ca	96.7% oest/prog 92.3%	68.10%	NA	nA	NA
Gogia (10)	Male Breast cancer: a single institute experience	2015	Indian journal of cancer	76	59	96% Invasive ductal ca	78% ER Positive	OS rate at 3 years was 95%, 80%, 65% and 30% in Stage I, Stage II, Stage III and Stage IV respectively	52	50	2
Popovic (11)	Male Breast Cancer in the era of modern therapies: serbian since centre experience report	2014	The Breast Journal	44	NA			43%	79%	79%	
Eryilmaz (12)	Male breast cancer: a retrospective study of 15 years	2012	J BUON	25	67	er - 60%, PR/HER2 in 40$/2%			72% MRM (18patients), 2 patients toilet Bilat mastectomy		56% SNLB, 84% had SNLD
		2013		86	62	NA	NA	65.80%			

Selcukbiricik (13)	Male Breast Cancer: 37-Year Data Study at a Single Experience Centre in Turkey		Journal of Breast Cancer						71% MRM, 2% Simple mastectomy	13% lumpectomy axillary dissection (BCS)	
El-Beshbeshi (14)	Male Breast Cancer: 10-Year Experience at Mansoura University Hospital in Egypt	2012	Cancer Biol Med.	37	57.7	94.6% invasive ductal ca			91.8% surgery	MRM 54%	
Sas-Korczynska (15)	The biological markers and results of treatment in male breast cancer patients. The Cracow experience.	2014	Neoplasma	32	62.7	4)% T3-T4	78.10%	NA	96.8% mastectomy	3.2% tumerectomy + Axillary lymphadenoectomy	
De Ieso(16)	Male breast cancer: A 30 year experience in South Australia	2010	Asia Pacific Journal of Clinical Oncology	63	62.07		63.5% had endocrine therapy	85%	88.90%		8% Sentinal biopsy
Stierer (17)	Male Breast Cancer: Austian Experience	1995	World J Surg	63	63		ER 78%, PR 70%	62%	147	Total Mast - 7%, MRM 40%, Radical 4%	
Gough (18)	A 50 year experience of male breast cancer: is outcome changing	1993	Surgical Oncology	124	62.5	95% invasive ductal carcinoma		47%	92% Mastectomy	92% mastecomty	41% radical, 39% modified radical, 12% simple
Engin (19)	Cancer of the Male Breast: The Turkish Experience	1993	Journal of Surgical Oncology	26	60	92% invasive ductal carcinoas		27%	81% Unilateralmastectomy		NA
Simon (20)	Racial differences in cancer of the male breast - 15 year experience in the detroit metropolitan area	1992	Breast Cancer Research & Treatment	244	64.9	46% invasive ductal carcinoma		NA	223, 59.6% MRM, 17.1% Simple mastectomy, 15.7% Radical mastectomy, 7.6% partial mastectomy		

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review of male breast cancer patients. The second phase that involves a large prospective outcomes trial is underway (EORTC trial 10,085 Male BC). This kind of large scale initiative will no doubt improve our understanding of the treatment of this pathology. The EORTC collaboration has attempted to overcome the challenges with prospective trial data collection by implementing an online data input system. Although it is difficult to quantify the number of participating institutions, potentially this system encourages a broader data capture. However this collaboration has succeeded in moving the research into male breast cancer towards the field of big data. This potentially will aggregate known information from all aspects of the disease into models that allow continual improvement and amalgamation in order to improve understanding and hypothesis generation.

The discussion of the surgical management of male breast cancer has focused on either discussing novel surgical approaches or on outcome data on radical mastectomy versus breast conserving surgery (Table 4). Our literature review identified 11 publications that discussed the surgical management of male breast cancer. Two papers present case studies of new techniques for breast conserving surgery, whilst one case study reports the use of a simple mastectomy under local anaesthetic for an obese patient with a symptomatic Aortic aneurysm. One paper discussed the benefits of fat grafting for male breast reconstruction. These cases demonstrate the paradigm shift amongst surgeons to adopt breast conserving techniques equivalent to those utilised in female breast cancer patients. One article investigates men's attitudes towards breast conserving surgery, particularly in their concerns over maintaining some 'aesthetic' functional breast and pectoralis shape post operatively. This is interesting as it reflects the similarities between women's and men's psychosocial reaction to breast removal and long term reconstruction [12]. Little has been documented about the potential need for immediate reconstruction of male breast cancer. In one case the use of fat grafting was reported as a potential reconstructive therapy to reconstruct the male pectoral profile post mastectomy. Traditionally the male mastectomy does not leave such a large tissue defect compared to female patients. This is due to the small amount of inherent breast tissue. In cases where resection has involved some part of the chest wall, flap based reconstruction can be utilised as volume replacement. More frequently patients undergo nipple reconstruction and tattooing to provide visual balance to the chest. Recent data published in 2016 shows that for early stage male breast cancer, breast conserving surgery yields comparable cause specific survival rates to modified radical mastectomy [13–17]. Such data may support a paradigm shift away from larger radical procedures, as was seen in female breast cancer over two decades ago. This data is corroborated by previous work published by Cloyd and colleagues from 6039 cases. They utilised the Surveillance, Epidemiology, and End results Program (SEER database) and highlighted a change in practice during the study period, particularly towards the latter end. They demonstrated a greater proportion of patients undergoing lumpectomy over mastectomy. Nguyen presented 9 cases of male breast cancer in whom patients demanded breast conserving surgery.

Surgical options for male breast reconstruction potentially need to be low volume and provide the anatomic profile of the male chest. The deep inferior epigastric perforator flap or the transverse abdominis muscle (TRAM) flap are also potential options, particularly in patients who may excess fat tissue around the umbilicus. Due to the rates of donor site morbidity and abdominal herniation with the TRAM, the DIEP may be a more favoured option. However such flaps may be preferred for reconstruction of larger volume defects. The latissimus dorsi is also an option for reconstruction amongst female patients. It could provide a low volume local flap option for male patients, however it may compromised some degree of function in the upper extremity girdle. Techniques from chest wall reconstruction may be compromised anatomically or too aggressive for the low volume tissue deficit that remains after tumour excision.

Currently, techniques such as liposuction that are adopted for gynaecomastia are precluded as they disrupt the tissue that prevents its histopathological analysis. The peri-areolar approach with surgical removal of the remnant areola tissue remains a common technique amongst plastic surgeons for this condition. Further development of the liposuction device may allow removal of breast tissue without lysis of the cells that are required for histopathological analysis [18–20]. This approach could provides adequate clearance and optimal aesthetic results. It may also be more conservative than a formal mastectomy, however at the moment this is merely a future direction [21].

There are significant limitations to small case series. Firstly the small size precludes any meaningful statistical analysis. Secondly the disparity between data collection of case sets makes direct comparison to other centres difficult. However such weaknesses strengthen the argument for an open access free registry for recording the epidemiology and surgical outcomes of such a patient group to facilitate larger scale analysis.

5. Conclusions

This case series and literature review has highlighted the low incidence of male breast cancer and the inherent difficulties in investigating it as a disease state. Our literature review draws attention to the number of podium presentations that focus on single centre experience of male breast cancer. Such presentations are not obligated to rec. There is currently no platform for such clinical data to record their findings in international data registries that would improve understanding. Despite the efforts of the EORTC – BIG – NABSG collaboration in collecting prospective data, an open access clinical case registry would enable the pooling of case experience from smaller centres for review.

Lastly it would ultimately allow a greater understanding of the surgical options employed by different centres and their overall success rates. It would enable, for the first time, a specific set of guidelines for the surgical management of male breast cancer and its reconstruction.

Ethical approval

Not Required.

Funding statement

None.

Author contribution

RS – Collected all data, wrote manuscripts.
MR – Wrote & edited Manuscript.
ME – Reviewed data and manuscript.

Conflicts of interest

None.

Research registration unique identifying number (UIN)

researchregistry1031.

Guarantor

Mohammed Ellebban is the guarantor.

Acknowledgements

None.

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