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MEME KANSERİ CERRAHİSİ SONRASI YARA KOMPLİKASYONLARI

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AMAÇ: Mastektomi sonrası en önemli komplikasyon seroma oluşumudur ve bu çalışmanın amacı meme kanseri cerrahisi sonrası erken yara komplikasyon oranını ortaya koymak ve bu komplikasyonlara neden olan risk faktörlerini belirlemektir.

METOD: Modifiye radikal mastektomi uygulanan 257 hasta seroma gelişimi, cilt flebi nekrozu ve yara enfeksiyonu açısından incelenmiştir. Risk faktörlerinin tespiti için multiple logistic regression analizi kullanılmıştır.

SONUÇLAR: Seroma 80 (%31.1) hastada gelişirken, yara enfeksiyonu ve cilt flebi nekrozu sırasıyla 19 (%7.3) ve 29(%11.2) hastada gelişmiştir. Şişmanlık (OR: 3.16, 95% CI: 1.45-8.02), ameliyatta yapılan kan transfüzyonu (OR: 3.32, 95% CI: 1.45-5.48) ve toplam drenajının 1000 cc'den fazla olması seroma oluşumuyla anlamlı olarak ilişkili bulunmuştur. Flep nekrozu ile ilişkili risk faktörleri; yaşın 50'nin üzerinde olması (OR: 4.36, 95% CI: 1.80-9.72), sigara içmek (OR: 2.94, 95%CI: 1.16-7.42) ve seroma oluşumu (OR: 2.81, 95% CI: 1.12-5.20) olarak bulunmuştur. Yara enfeksiyonu ile ilişkili risk faktörleri ise; ameliyatın 180 dakikadan daha uzun sürmesi (OR: 2.74, 95%CI: 1.06-7.16) ve seroma oluşumu (OR: 4.62, 95% CI: 1.56-11.02) olarak bulunmuştur.

SONUÇ: Mastektomi sonrası seroma oluşumu en önemli komplikasyondur ve yara enfeksiyonu ve cilt flebi nekrozunun gelişimine neden olabilir.

WOUND COMPLICATIONS FOLLOWING BREAST CANCER SURGERY

BACKGROUND AND OBJECTIVE: Seroma is the most significant complication after mastectomy and the objective of this study is the determination of early wound complications rate for breast cancer surgery and the risk factors predisposing to these complications.

METHODS: 257 patients that had been operated with modified radical mastectomy were evaluated for seroma formation, skin flap necrosis and wound infection. Multiple logistic regression analysis was performed to determine the risk factors.

RESULTS: Seroma developed in 80(31.1%) patients, wound infection and skin flap necrosis developed in 19(7.3%) and 29(11.2%) patients respectively. Obesity (OR: 3.16, 95% CI: 1.45-8.02), peroperative blood transfusion (OR: 3.32, 95% CI: 1.45-5.48) and amount of total drainage more than 1000 ml. (OR: 7.54, 95% CI: 2.52-15.80) were significantly associated with seroma formation. The significant risk factors for flap necrosis were age older than 50 years (OR: 4.36, 95% CI: 1.80-9.72), smoking (OR: 2.94, 95%CI: 1.16-7.42) and seroma formation (OR: 2,81 95% CI: 1.12-5.20); for wound infection were prolonged operation more than 180 minutes (OR: 2.74, 95%CI: 1.06-7.16) and seroma formation (OR: 4.62, 95% CI: 1.56-11.02).

CONCLUSION: Seroma was the most significant complication and predictive for wound infection and skin flap necrosis.

Breast cancer remains the commonest malignancy in women. Modified radical mastectomy or wide local excision-axillary dissection are standart treatment options for most patients with breast cancer.

Seroma formation, skin flap necrosis and wound infection are common complications in breast cancer surgery (1-7). These complications prolonge hospitalisation, increase hospital cost and delay the adjuvant therapy (8).

Various factors have been reported to cause seroma, flap necrosis and wound infection. These parameters are grouped as the patient factors (age, weight, hypertension, diabetes, smoking, alcohol…) (2,6-11), the tumour factors (tumour size, axillary lymph node status…) (13, 14) and the surgical factors (usage of electrocautery for flap dissection, lenght of operation time…) (1, 2, 5).

We analysed the effects of age, body mass index, hypertension, diabetes, smoking, amount of wound drainage, total number of removed lymph nodes, axillary lymph node status, duration of drainage, peroperative transfusion and operation time to postsurgical wound complications.

Material and methods

257 consecutive patients analysed prospectively for postoperative wound complications between May 2002 and August 2003 in Ankara Oncology Hospital. Modified radical mastectomy was performed with full axillary dissection. Flap dissection and axillary dissection were performed with cold scalpel. In axillary dissection the insertion of pectoralis minor muscle to scapula was disrubted but pectoralis minor muscle was left in place. In modified radical mastectomy drainage with a closed suction drain was performed with one drain in the region of axillary dissection and a second drain in the breast region. The subcutaneous tissue was closed

with an interrupted 3-0 polyglactin sutures and the skin was closed with a running 4-0 polypropilene subcuticular suture. Drains were removed when the amount of drainage was less than 50 cc/day. The arm was immobilized for postoperative seven days. Hand and wrist movements were allowed, but the shoulder movements were started on postoperative seventh day under the supervision of a physiotherapist.

Parameters including the age, body mass index (weight-kg/ height-m^2), presence or absence of hypertension, diabetes, smoking, peroperative blood transfusion, preoperative chemotherapy, length of operation time, type of operation, the amount of first day drainage, total amount of drainage, time of drain removal, number of removed lymph nodes and involved lymph nodes were recorded for each patient.

Seroma was defined as clinically identifable any fluid collection in the axilla or under the flaps. Flap necrosis was defined as any full thickness skin loss requring therapeutic intervention. Wound infection was defined as any evidence of significant redness, pain and swelling around the wound or purulent drainage at the incision site.

All patients were followed up to 30 days after operation for evidence of any wound complications.

The results were analysed by multiple logistic regression analysis (SPSS for Windows 10.05, SPSS Inc. Chicago, Illionis, USA). Values were stated as means±standart deviation. All results were described with odds ratio and 95% confidence interval. Univariate logistic regression models first used to evaluate the potential risk factors for complications. A forward logistic regression method was used to develop multivariate logistic regression model for risk factors.

Table 1. Characteristics of the patients

		n(%)
Age	≤50	143 (55.6)
	>50	114 (44.3)
Body mass index	<25	91 (35.4)
	25-30	88 (34.2)
	>30	78 (30.3)
Diabetes Mellitus		22 (8.5)
Hypertension		42 (16.3)
Smoking		48 (18.6)
Preoperative chemotherapy		35 (13.6)
Peroperative transfusion		34 (13.2)
Duration of operation	≤180 min.	134 (52.1)
	>180 min.	123 (47.8)
Amount of first day drainage	≤200cc	147 (57.1)
	>200 cc	110 (42.8)
Amount of total drainage	<500 cc	74 (28.7)
	500-1000cc	113 (43.9)
	>1000cc	70 (27.2)
Drainage time	≤5 day	111 (43.1)
	> 5 day	146 (56.8)
Total lymph nodes	≤ 20	91 (35.4)
	>20	166 (64.5)
Involved lymph nodes	0	95 (36.9)
	0-3	66 (25.6)
	>3	96 (37.3)

Results

In this series, mean age was 51.36±11.80 (range: 24-81), mean body mass index was 2641±4.61 (range: 14.4-45.1). Two hundred fifty seven modified radical mastectomies were performed. Mean operation time was 192.3±47.0 minutes (range: 60-330). The mean postoperative period until drain removal was 7.42±2.87 days (range: 4-19), the amount of drainage in the first postoperative day and total hospital drainage were 225.4±78.0 milliliter (range: 70-440) and 805.7±420.0 milliliter (range: 145-2000), respectively. The mean total number of nodes removed and the number of positive nodes were 27.2±9.36 (range: 7-71), 5.01±7.90 nodes (range: 0-47), respectively. The patient characteristics are shown in Table I.

Seroma developed in 80 patients among the 257 patients with an overall incidence of 31.1%. It is noteworthy that, in 15 and 13 of 80 patients with seroma, flap necrosis and wound infection also developed respectively.

Flap necrosis developed in 29(11.2%) patients. No spesific therapy was required in 27 wounds with necrosis. Two patients had a significant wound dehiscence that required skin grafting.

Wound infection developed in 19(7.3%) patients. All infections were treated with oral antibiotics.

With logistic regression analysis; high body mass index, peroperative blood transfusion and increased amount of total drainage were found to be predictive of developing seroma. The significant risk factors for flap necrosis were age, smoking and seroma formation; whereas for wound infection were prolonged operation and seroma formation. (Table II)

Discussion

Postoperative seroma formation is the most common complication following breast cancer surgery. The use of closed suction drains reduce the incidence of seroma following modified radical mastectomy and breast conserving surgery-axillary dissection. But drains are often uncomfortable to the patients and reduce postoperative mobility. Also, there is no uniformly accepted management of drains after surgery. The lenght of time for drains to be left in place is also highly variable. Usually, they are removed when output is less than 30 to 50 ml/day. But in some studies,

Table 2. Factors predictive of seroma, flap necrosis and wound infection on multivariate analysis

		p	*Relative risk*	*95% confidence interval*
Seroma	BMI >30	0.002	3.16	1.45-8.02
	Peroperative transfusion	0.002	3.32	1.45-5.48
	Total drainage>1000cc	0.0001	7.54	2.52-15.80
Flap necrosis	Age>50	0.001	4.36	1.80-9.72
	Smoking	0.02	2.94	1.16-7.42
	Seroma	0.035	2.81	1.12-5.20
Wound infection	Duration of operation: >180 min.			
	Seroma	0.038	2.74	1.06-7.16
		0.002	4.62	1.56-11.02

drains may also be removed in early postoperative days without regarding the amount of drainage (15, 16). Seroma may persist for several months, require multiple aspirations, increase time for hospitalization and delay adjuvant therapy (8, 17). Seromas may also become infected and cause flap necrosis (1, 7, 8, 14, 18, 19). There are lots of reports describing techniques for the prevention of seroma formation; such as closing dead space, flap tacking procedures, tissue glues, restriction of shoulder movements (20, 21, 22, 23). The rates of seroma formation after breast cancer surgery varies between 10% to 48% (1, 16).

Among several risk factors recognized for seroma formation are; advanced age(6), lenght of drains, flap dissection by using electrocautery (1,5), obesity (6, 7, 9, 24), the amount of drainage (25), involved lymph nodes (14), early shoulder movement (23), and hypertension (9).

In this study the incidence of seroma formation was 31.1%. At statistical analysis, body mass index more than 30, peroperative blood transfusion and the amount of total drainage more than 1000 ml were found to increase the incidence of seroma formation. In obese patients, larger dead space may be related with seroma formation (7, 12, 24, 26). Obesity has also been correlated with other complications, particulary with flap necrosis and wound infection (2, 6). But in some other reports no correlation between seroma formation and obesity was observed (1, 5, 14, 25, 27).

Although it was demonstrated by Say et al. that seroma was seen more frequently in the group with peroperative transfusion (7), Kumar et al. showed that there was no correlation between blood transfusion and seroma formation (9).

In this series, flap necrosis was seen in 11.2% of the subjects. In different series flap necrosis rate was reported in a range of 0 to 26% (4, 21). Say suggested that advanced age, prolonged operation and seroma formation are the risk factors for the development of necrosis (7). Vinton reported that epidermolysis is more frequent in smokers (6). Aitken also showed that seroma increases the formation of necrosis (18). In this study; smoking, advanced age and seroma were found to be the risk factors for the development of necrosis. Smoking has an acute detrimental effect on blood flow and tissue oxygen tension (28, 29). Advanced age may be related with impaired circulation of the flap with regard to atherosclerosis. Seroma may also interrupt the interaction between the flaps and the underlying tissue and cause necrosis.

Although modified radical mastectomy is a clean surgical procedure, wound infection rate is quite high. In different series wound infection rates up to15% are reported (6). There is no evidence for prophylactic antibiotic usage to decrease the infection rate (30, 31). The duration of operation and the extend of the dissection may be the major factors for infection. Two-step operations, smoking, alcohol use, diabetes, obesity, advanced age are the other important factors for infection (2 ,10, 11). In this study, it was found that the duration of operation and the seroma formation are the factors that alter infection rates. In a series including all breast surgery interventions by Rotstein; while the prolonged operation was related with infection in univariate analysis, this relation was not evident with multivariate analysis (11). But in another series, risk of wound infection has been shown to be directly proportional to the duration of the operative procedure [32]. The increased exposure of the surgical field to the contamination was found to be the most important reason for infection. The seroma formation is a risk factor for wound infection, because seroma does not contain some humoral factors like complement and fibronectin (33). Bonnema reported that low concentrations of albumin and transferrin in the seroma may contribute to the inability of the fluid to support lymphocyte blastogenesis and the wound healing process (34). It has also been shown that, seroma fluid around prosthetic graft in vascular surgery is associated with the presence of a fibroblast inhibitor in serum (35).

Seroma as the most frequent complication after breast surgery is important, because its presence brings the other more serious complications. Every preventive measure to decrease seroma formation should be taken for mastectomy cases.

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