

The »Round Block« Surgical Technique in the Management of Multicentric Fibroadenomas

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ABSTRACT

The »round block« surgical technique in the treatment of a female patient with multiple, multicentric fibroadenomas in both breasts is presented. The advantages of this technique for patients with multicentric benign breast lesions are minimal postoperative scar and a favourable aesthetic result. Breast dimensions and the areolar diameter were measured in 203 subjects of Primorsko-goranska county during examination in the Out-Patient Hospital for Breast Diseases, including the operated patient. Smaller breast dimensions and a larger areolar diameter provide an easier access to any part of the breast due to a smaller distance between the incision and a fibroadenoma and a larger circumference of circular periareolar incision, thus facilitating the surgery. The analysis of average, maximum and minimum values measured shows that the »round block« technique can be performed in all cases of multiple and multicentric fibroadenomas regardless of breast size, areolar diameter and the location of fibroadenoma in the breast.

Key words: multicentric fibroadenomas, »round block« technique, dimensions of breast, areolar diameter

Introduction

The incidence of fibroadenomas varies from 7–25%^{1–4}. The disease is more prevalent in women from higher socioeconomic classes and in dark-skinned populations^{5–9}. The incidence of multiple fibroadenomas (two and more) in one breast ranges from 7–20% according to different authors^{4,5,10}. A higher number of multiple fibroadenomas has been reported in black and oriental populations^{11–13}. The occurrence of five or more fibroadenomas in one breast is very rare in the white populations in Europe. A few individual cases have been described. Williamson et al. have reported a case of a woman with more than 20 fibroadenomas distributed through both breasts¹⁴. It has been noticed that multiple fibroadenomas develop more frequently in female patients who are administered cyclosporine as an immunosuppressive therapy^{15,16}. A link between the presence of fibroadenomas and an increased risk of breast cancer has not been confirmed^{5,17}. However, it has been determined that female patients with complex fibroadenomas and family history of breast cancer have a relative risk 3–4 times higher than women in the general population^{11,17}, and, women with a positive

family history and fibroadenomas with hyperplasia and atypia after excision of fibroadenoma have about 7 times increased relative risk of breast cancer^{17,18}. The term complex fibroadenoma was coined by Dupont and defined as those fibroadenomas showing cysts larger than 3mm, sclerosing adenosis, epithelial calcifications and papillary apocrine metaplasia^{11,17}. In Dupont's study about 33% of the fibroadenomas could be classified as complex¹⁷. Some authors claim that the incidence of malignancy in complex fibroadenomas is low (1.6%) and recommend a conservative approach similar to the approach for simple fibroadenomas¹⁹. The usual management of fibroadenomas is either open surgical biopsy or follow-up based mainly on the size, growth rate and the patient's age^{20,21}. Anyway, all palpable cases must have a triple assessment: clinical examination, radiologic tests and cytology/biopsy (fine needle aspiration cytology, core needle biopsy or open surgical biopsy in suspect cases). Indications for excision biopsy are: suspicious findings on cytology or core biopsy, rapid growth (increase in dimension >20% for a 6-month interval), large size not cosmetically

accepted and the patient's choice^{22,23}. Because fibroadenomas can be bothersome to the patient, causing discomfort or emotional distress, physical deformity, most breast surgeons will respect an informed patient's preference for surgical treatment. Therefore, the usual management of multiple fibroadenomas is complete excision²⁴. Surgical treatment may lead to undesirable scarring or extensive ductal damage²⁵. Because the application of the »round block« surgical technique in the treatment of multicentric fibroadenomas can considerably reduce these unwanted effects, the aim of this study was to determine ability of performing these operation in patients with multicentric fibroadenomas.

Materials and Methods

The patient was a 27-year old woman, with a negative family history, nullipara, with regular menstrual cycles 6/28. She did not use hormone therapy. Four years before admission to hospital, she noticed two to three lumps in each breast. During the last year, she developed psoriasis, the lumps increased at least twice according the patient's subjective evaluation, and their number also increased. Breast ultrasound and clinical examination were performed. Ultrasound detected 4 hypochoic lesions with well-defined borders in the left breast and 4 similar lesions in the right breast. All lesions identified by ultrasound were palpable. Dimensions of changes determined by ultrasound ranged from 1.2 to 5 cm at the largest diameter. They were localized in several different quadrants (multicentric) in each breast (Figures 1 and 2).

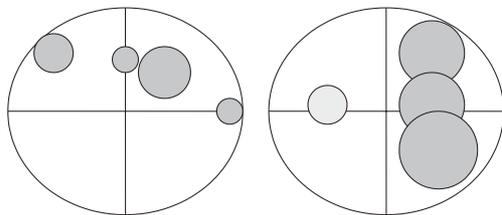


Fig. 1. Schematic presentation of palpable lesions identified by ultrasound.



Fig. 2. Presentation of lesions marked on the patient.



Fig. 3. De-epithelialized ring along the areolar margin.

The lesions were removed by the »round block« surgical technique. A ring of skin 5 mm in width was de-epithelialized in circular shape along the areolar margin (Figure 3).

Subcutaneous tissue was then incised in the middle of the de-epithelialized ring and fibroadenomas were removed partially by sharp and partially by blunt dissection, with maximum saving of the adjacent breast tissue. Dissection was facilitated by pressure on the lesions from outside towards the incision, and the utilization of supportive sutures through fibroadenomas for additional closer approximation to the incision point (Figures 4, 5 and 6).

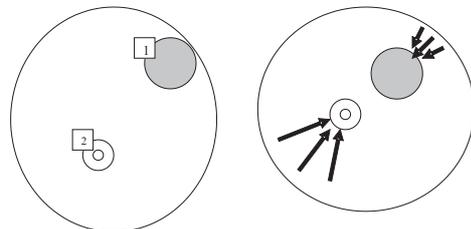


Fig. 4. Schematic presentation of a peripheral fibroadenoma and options for its approximation to the areola (outside pressure, tissue stretching using hooks and supportive sutures, 1=fibroadenoma, 2=nipple-areola complex).



Fig. 5. Excision of fibroadenoma by utilizing supportive sutures.

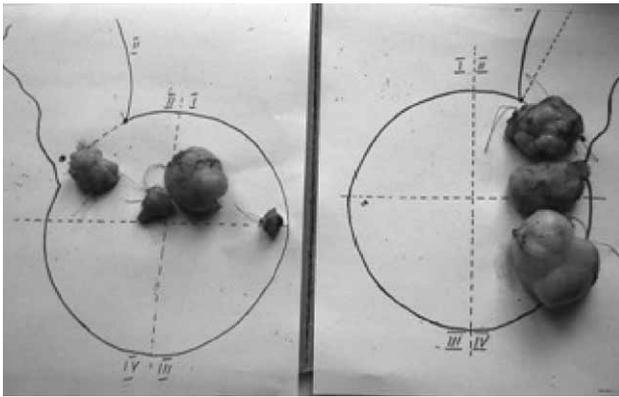


Fig. 6. Scheme of removed fibroadenomas.

After control of haemorrhage, the periareolar wound was closed with the use of four single-stitch subcutaneous slowly absorbing and one continuous intracutaneous slowly absorbing sutures. In order to evaluate surgical options in the management of multicentric breast lesions by periareolar circular incision, we measured breast dimensions of 203 female subjects in Primorsko-goranska county who were examined in the Out-Patient Hospital for Breast Diseases. Breast measurements were performed while the subjects were in the sitting position (Figure 7). The height and weight of the subjects were also measured.

Results and Discussion

Results

Pathohistological examination of all seven excised tumors confirmed the presence of fibroadenomas. During operation a lesion in the left breast at the border of median quadrants was shown to be a cyst of denser content. Dimensions of fibroadenomas in the left breast were: 4×3×1.5 cm, 4×2×1.3 cm, and 5×4×2 cm. Dimensions of

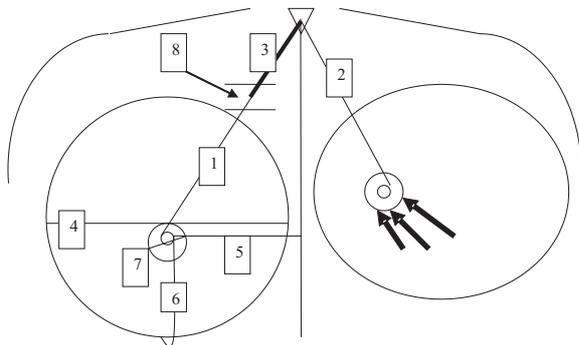


Fig. 7. Schematic presentation of breast measurements (1=distance between the jugular fossa and the nipple, 2=distance between the nipple and the jugular fossa when pressing the nipple and areola from outside towards the jugulum, 3=distance between the jugular fossa and the midline of the second intercostal space, 4=breast width, 5=distance between the nipple and the median line, 6=distance between the nipple and inframammary line, 7=areolar diameter at its widest part, 8=second intercostal space).



Fig. 8. Postoperative results two months after surgery.

fibroadenomas in the right breast were: 3.4×3.4×1.5 cm, 2.5×2.2×0.8 cm, 1.5×1.3×0.5 cm and 1.2×1×0.5 cm. The state two months after surgery is shown in Figure 8. The patient was very satisfied with the aesthetic result of the surgery. Tables 1 and 2 show the measured values.

Discussion

Multicentric fibroadenomas in both breasts are very rare in clinical practice. The same observation was seen at our Surgical Clinic. That is why during the last 10 years we have treated only nine patients with multiple fibroadenomas. Three of this patients have had only two fibroadenomas in one breast (Table 3).

One can see the rarity of incidence of multiple fibroadenomas when compared with number of biopsy performed at our Surgical Clinic in the last 10 years (Table 4).

In our practice »round block« technique is usually used like breast cancer operation for tumours situated in paraareolar region, mostly in upper quadrants, preferentially in smaller tumours (not larger than three cm in diameter), and that are situated deeper than one cm from the skin. Figure 9 demonstrates the application of »round block« technique after segmentectomy for breast cancer.

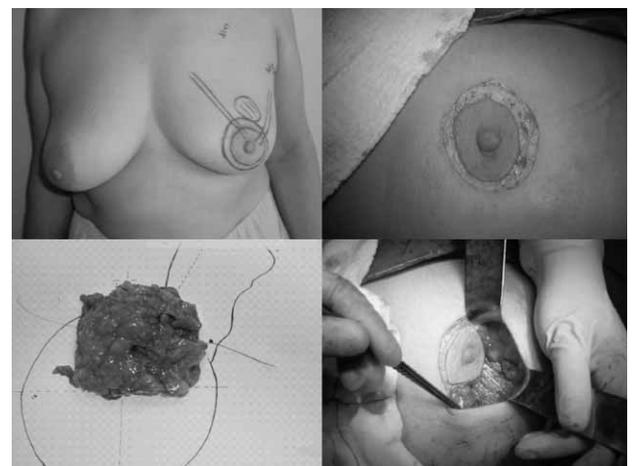


Fig. 9. Segmentectomy of breast cancer using »round block« technique.

TABLE 1
PRESENTATION OF AVERAGE, HIGHEST AND LOWEST VALUES OF PATIENTS' AGE, WEIGHT, HEIGHT AND BODY MASS INDEX

	Average value	Highest value	Lowest value	Operated patient
Age (years)	48.7	74.4	27.2	27.2
Weight (kg)	70.5	95.5	54.3	59.0
Height (cm)	163.8	183.4	156.4	168.0
Body mass index (weight in kg/height in m ²)	26.3	32.9	20.9	20.9

TABLE 2
PRESENTATION OF AVERAGE, HIGHEST AND LOWEST VALUES OF MEASUREMENTS IN 203 SUBJECTS, INCLUDING THE OPERATED PATIENT

	Average value (cm)	Highest value (cm)	Lowest value (cm)	Values in operated patient (cm)		
				Right breast	Left breast	Average value
Distance JF-N (1)	24.9	38.4	14.6	21.5	21.1	21.3
Distance JF-N when pressing N towards JF (2)	16.2	19.5	8.5	14.6	14.0	14.3
Difference 1–2	8.6	14.8	5.0	6.9	7.1	7.0
Distance JF-midline of the second intercostal space (3)	5.2	8.3	4.1	5.5	5.5	5.5
Difference 1–3	19.7	31.1	10.5	16.0	15.6	15.8
Breast width	14.2	21.6	9.6	12.0	10.8	11.4
Distance N-ML	11.4	17.0	8.5	9.0	8.6	8.8
Distance N-IML	7.9	18.2	5.8	6.8	6.0	6.4
Areolar diameter	4.9	8.1	2.9	4.4	4.8	4.6

JF – jugular fossa, N – nipple, ML – median line, IML – inframammary line

During the biopsy of lesions for which we suppose to be fibroadenomas, when technically possible, we usually use the partial incision along the margin of the areola, because in such cases the postoperative scar is almost invisible. Figure 10 is showing the partial incision along the margin of the areola during the biopsy of fibroadenoma.

It is recommended to apply the periareolar circular incision just in case of multiple fibroadenomas situated

in different quadrants of one breast. Figure 11 demonstrates the schematic view of two different approaches to this problem (the application of partial incision along the areola, and periareolar circular incision).

In case of our patient with multiple fibroadenomas in her right breast (all the fibroadenomas were situated in the upper quadrants of the breast – Figure 1) the partial incision along the areola should be used. Our opinion is that periareolar circular incision in this very case is better because of the easier approach to lesions (larger incision means the easier approach, and the scar is minimally visible).

TABLE 3
PRESENTATION OF PATIENTS WITH MULTIPLE FIBROADENOMAS TREATED AT SURGICAL CLINIC OF RIJEKA FROM 2001-2010

Total number of fibroadenomas in both breasts per patients	Total number of fibroadenomas in left breast	Total number of fibroadenomas in right breast
3	2	1
4	0	4
3	2	1
4	2	2
4	1	3
3	3	0
5	3	2
6	4	2
7	3	4
Total number: 39	Average number of fibroadenomas in left breast: 2.22 (20/9)	Average number of fibroadenomas in right breast: 2.11 (19/9)
Average number of fibroadenomas per patient: 4.33 (39/9)		



Fig. 10. Presentation of periareolar incision biopsy of fibroadenoma.

TABLE 4
PRESENTATION OF BIOPSIES PERFORMED AT OUTPUT-PATIENT HOSPITAL AND AT SURGICAL CLINIC OF RIJEKA FROM 2001-2010

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of output biopsies	168	162	165	152	152	138	140	137	143	134
Number of palpable lesion biopsies	87	84	77	65	75	29	33	31	35	28
Number of nonpalpable lesion biopsies	135	127	165	168	127	85	86	57	64	69

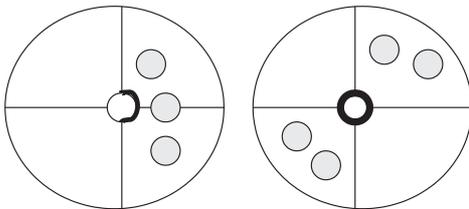


Fig. 11. Schematic presentation of partial periareolar incision and »round block« technique during the biopsy of multiple fibroadenomas.

Figure 12 and Figure 13 are showing the other cases of multiple fibroadenomas biopsies in one breast where the periareolar circular incision has been applied.

Circular periareolar incision by »round block« technique permits access to all parts of the breast. This surgical approach can be compared to the centre of the circle. Distance (radius) from the nipple and areolar area (localized in the middle of the circle) to any peripheral part of the breast (circle) is always identical. Smaller breast dimensions and a larger areolar diameter provide an easier access to any part of the breast due to a smaller distance between the incision point and fibroadenoma and a larger circumference of the periareolar incision, thus facilitating the surgery. Performed measurements gave an average areolar diameter of 4.9 cm, and the lowest areolar diameter of 2.9 cm (Table 2). The average circumference of the incision was $2r\pi = 2 \times 2.45 \times 3.14 = 15.39$ cm (in the smallest areolar diameter the incision circumference was 9.1 cm) which is sufficient for wide and extensive access during surgery. Fibroadenomas located in breast periph-

ery are at the greatest distance from the areola. Theoretically, the greatest possible distance between fibroadenoma and the nipple is demonstrated as the difference between the distances jugular fossa – nipple and jugular fossa – midline of the second intercostal space because the breast in the cranio-caudal direction extends from the second to the sixth or seventh intercostal space²⁶. According to the measurement results in our subjects, it amounts to $24.9 - 5.2 = 19.7$ cm for average values, $38.4 - 8.3 = 31.1$ cm for the highest values, and $14.6 - 4.1 = 10.5$ cm for the lowest values (Table 2). These distances can be considerably reduced during surgery. Average distance between the jugular fossa and the nipple when pressing the nipple and areola towards the jugular fossa was 16.2 cm, the highest distance was 19.5 cm, and the lowest 8.5 cm (Table 2). Thus, peripheral fibroadenoma can be approximated to the nipple and areola by pressing mobile breast tissue near the periareolar incision during operation. In the breasts without ptosis, a half of breast width (circular radius) may be considered as the largest distance between fibroadenoma and the nipple. The average breast width in the examined population was 14.2 cm, and the largest 21.6 cm (Table 2). A half of the highest value of breast width was 10.8 cm, which is less (easier performance of surgery) than the largest distance between the jugular fossa and the nipple of 19.5 cm when pressing periareolar breast tissue towards the jugular fossa in our subjects. By pressing fibroadenoma from outside towards the incision point (even from the least mobile upper peripheral parts of the breast), it can approximate the incision for additional 2 to 5 cm, and when fibroadenoma is reached by dissection, its excision can be facilitated with



Fig. 12. Biopsy of 2 fibroadenomas using »round block« technique.

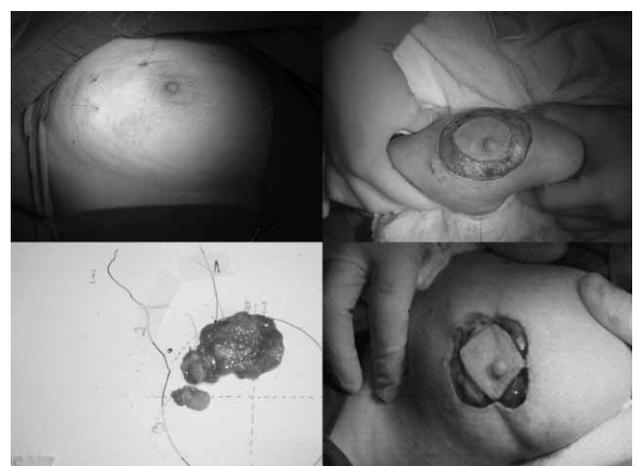


Fig. 13. Biopsy of 3 fibroadenomas using »round block« technique.

the use of supportive sutures through fibroadenoma. If the length of the arms of surgical hooks of 10 cm is taken into account, and the average areolar radius of 2.5 cm is added (distance between the nipple and peripheral areolar margin i.e. the incision point), as well as 5.2 cm (average value of the distance jugular fossa – midline of the second intercostal space) and 2 cm (the lowest value obtained by pressing peripheral fibroadenoma towards the incision), the calculated sum is 19.7 cm, which exceeds 19.5 cm (in our measurements the highest distance between the jugular fossa and the nipple when pressing periareolar breast tissue towards the jugular fossa) for 0.2 cm. It means the access to fibroadenomas even at the largest distance from the periareolar incision is simple, regardless of breast size. A peripheral fibroadenoma (at the largest distance from the periareolar incision utilized in the »round block« technique) can approximate by stretching the tissue towards fibroadenoma by surgical

hooks, with the use of supportive sutures through fibroadenoma and by outside pressure applied to fibroadenoma from the periphery to the centre. In the management of multicentric fibroadenomas, if they are to be removed through one incision, the »round block« surgical technique is the preferred approach, especially for the breast of smaller and medium dimensions. In case of the third and fourth degree of breast ptosis, based on Regnault's classification²⁷, the inframammary incision (circular centre – the inframammary midline, not the nipple) is also an adequate approach.

In conclusion, the »round block« surgical technique can be applied in all cases of multiple and multicentric fibroadenomas regardless of breast size, areolar diameter and the location of fibroadenoma in the breast. Also, this surgical technique yields a good aesthetic result due to small periareolar scar.

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KIRURŠKA TEHNIKA KRUŽNIM PERIAREOLARNIM REZOM U LIJEČENJU MULTICENTRIČNO LOKALIZIRANIH FIBROADENOMA

SAŽETAK

Prikazana je kirurška tehnika kružnim periareolarnim rezom (»round block« tehnika) u liječenju bolesnice s multipnim, multicentrično lokaliziranim fibroadenomima obje dojke. Prednosti ove operacije kod multicentričnih benignih lezija dojke su minimalan postoperacijski ožiljak i dobar estetski rezultat. Izvršena su mjerenja dimenzija dojki i promjera areole u 203 ispitanice Primorsko-goranske županije pregledanih u ambulanti za bolesti dojke, uključujući i operiranu bolesnicu. Manje dimenzije dojke i veći promjer areole znače lakši pristup u bilo koji dio dojke, zbog manje udaljenosti reza od fibroadenoma i veće duljine opsega kružnog operativnog reza oko areole, a time i lakše izvođenje operacije. Analizom prosječnih, najvećih i najmanjih vrijednosti dobivenih mjerenjima zaključili smo da se »round block« operacija može primijeniti u svim slučajevima multiplih i multicentrično lokaliziranih fibroadenoma bez obzira na veličinu dojke, promjer areole i lokalizaciju fibroadenoma u dojci.