



OPTIMAL ANALGESIA FOR BREAST SURGERY ENHANCED RECOVERY IN DAY SURGERY

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SUMMARY – Aesthetic breast surgery is the most common body surgery at Bagatin Polyclinic. During 2020 and 2021, altogether 274 cosmetic surgeries were performed on the breasts. This included breast augmentation, breast augmentation and lifting operations, in a ratio of 2 to 1. According to statistics from the American Association of Plastic Surgeons (ASPS), in 2020 breast augmentation with implants was ranked fifth of all cosmetic surgeries performed and the second largest body surgery immediately after liposuction, with 193,073 procedures done. In addition to these procedures, breast augmentation (87,051) and breast reduction (33,574) procedures were also popular. Due to the increased interest in these procedures and their high daily percentage of operating programs, adequate analgesia and recovery of patients, who undergo these cosmetic breast corrections, are important. Today, it is no longer enough for an operation to go well and the patients to have good results. It is also important that the procedure itself, from induction of anesthesia to early and late recovery, allows for a quick return to daily activities and work.

Key words: *Aesthetic breast surgery, breast augmentation, breast analgesia, postoperative recovery.*

INTRODUCTION

Breast analgesia is the most important segment of postoperative recovery and is the reason why patients are satisfied with the whole procedure. It is no longer enough just to make a technical and aesthetic quality procedure, but also early postoperative recovery is a reason for patients to think of the procedure as something that has been pleasant experience for them. What we know about breast augmentation surgery is that pain is most often present in the first 7 days and is most intense in the first 3 to 4 days. Breast augmentation surgery is planned and sparing in itself, and the procedure itself is thought of in a way that saves all

structures as much as possible and minimizes tissue trauma. The breast consists of skin-subcutaneous tissue, breast tissue that is most often of the mixed type in terms of a combination of glandular and adipose tissue and below is the large pectoral muscle which is the most common implant cover. The reason for using muscle as a cover is that most often a thin layer of breast tissue which is present cannot adequately cover the implant. What is being done in the procedure itself, in order to achieve a natural result, the lower grip of the large pectoral muscle is released, which still leaves the necessary and quality cover.

Anatomy: The breasts vary in size, but in most cases extend from the second to sixth rib, and from the sternum to the anterior axillary line, with the axillary tail in the outer and upper positions, which can be palpated along the outer border of the pectoralis major muscle. The mammary tissue lies directly over the

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pectoral major muscle and is separated from the outer facia of this muscle by a layer of adipose tissue which is continuous with the fatty stroma of the gland itself. Pectoralis major muscle forms the fullness of the upper position of the chest, and its inferior border is the anterior axillary fold. This muscle has the small clavicular portion, larger sternocostal, and abdominal portion. The muscle is innervated by the lateral and medial

pectoral nerves from both the lateral and medial cords of the brachial plexus, involving all the roots (C5-T1). Sensory innervation of the breast is dermatomal in nature. It is mainly derived from the anterolateral and anteromedial branches of thoracic intercostal nerves T3-T5. Supraclavicular nerves from the lower fibers of the cervical plexus also provide innervation to the upper and lateral portions of the breast (1) (Fig1,2).

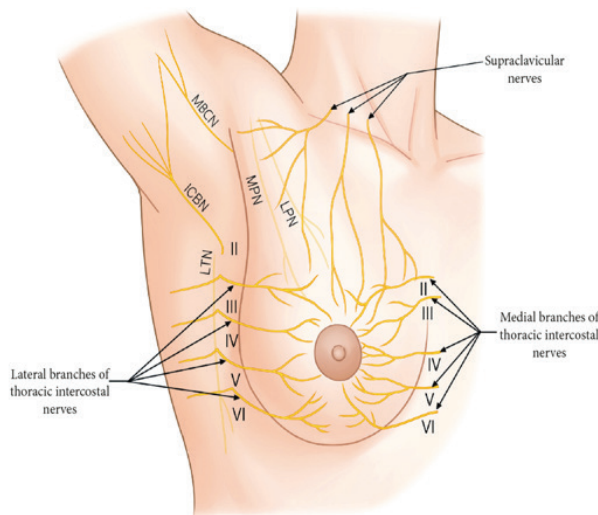


Figure 1 Innervation of the breast

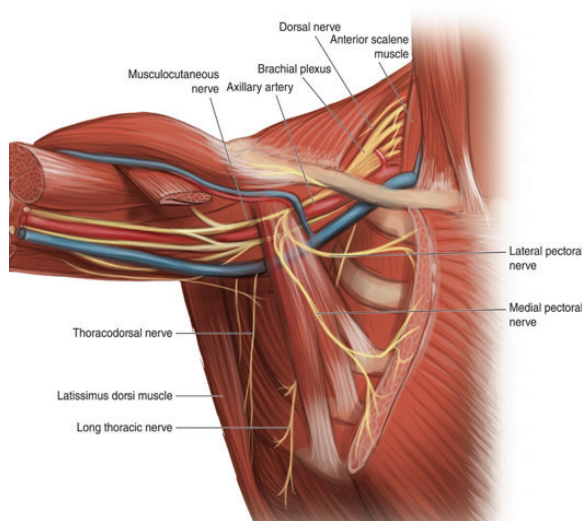


Figure 2 Innervation of the pectoral muscle

Bupivacaine: Bupivacaine is a long-acting amino amide local anesthetic commonly used for wound infiltration, in breast surgery involving implant use (2-4). Its effectiveness is limited by its average action of 12 h (5-7). Liposomal bupivacaine (Depot bupivacaine) has a longer action and lasts an average of 2 to 3 days. Some studies show a shortening of hospi-

talization and a reduction in pain of up to 40 to 50% by 24 h (8), while others show only a reduction in analgesic intake within the first 48 to 60 hours (9,10). There are few studies (out of 12 randomized clinical studies) that have shown analgesic improvement comparing bupivacaine and liposomal bupivacaine (10-16).

Table 1 Properties of some local anesthetics

Agent	Lipid solubility	Relative potency	pKa	Onset of action	Plasma protein binding (%)	Duration (min)
Procaine	1	1	8.9	Slow	6	60 – 90
Lidocaine	3.6	2	7.7	Fast	65	90 – 200
Bupivacaine	30	8	8.1	Medium	95	180 – 600
Ropivacaine	2.8	8	8.1	Medium	94	170 – 470
Levobupivacaine	30	8	8.1	Medium	95	180 - 600

In daily infiltration, bupivacaine is used in combination with lidocaine for wound infiltration, while in the pectoralis major region it is used alone.

Pictures in the operating room – local infiltration of the wound (Fig.3).



Figure 3. Infiltration of the initial cut for breast augmentation

Interfascial blocks. Pecs I block (2011) - application of a local anesthetic to the pectoral muscle region between large and small pectoral muscles (17)(Fig. 4,5).

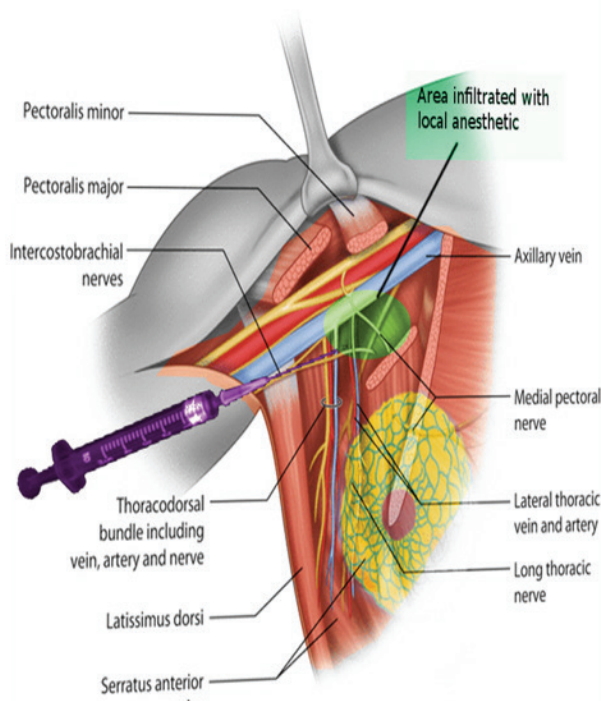


Figure 4 Analgesia of pectoral nerves

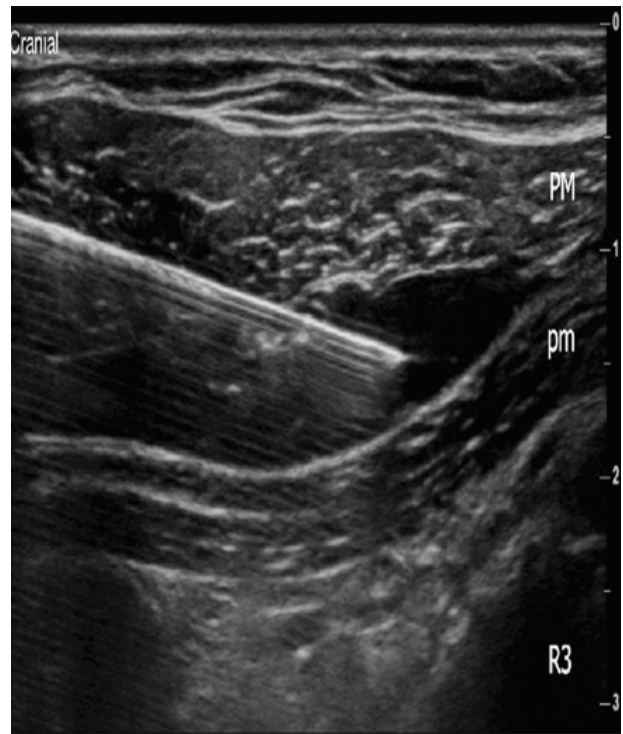


Figure 5 Ultrasound guided block of medial and lateral pectoral nerve

According to the previously mentioned block, we made our version of the block with application to the same region, but directly through the inframammary incision into the region between the pectoralis major and minor pectoralis muscle where the medial and lateral pectoralis nerve pass.

MATERIALS AND METHODS

The procedure of breast augmentation technique in general analgesia is following the previously placed markings in a standing position and after additional verification with the correct size, the planned incision site in the inframammary furrow area of 5 cm is infiltrated. Infiltration is performed with a combined analgesic solution consisting of lidocaine with adrenaline and bupivacaine. An infiltration of 10 ml per side, and a wait of about 10 minutes before beginning the procedure. Following this, an incision is made according to the checked mark and the implant bed is meticulously prepared, first the subglandular and then the submuscular layer. After the formation of the submuscular layer, the large pectoral muscle in the lower inner part of the breast is released, which

ensures a natural position and contour of the lower inner segment of the breast. To make sure that we have released the cortex enough and that the breast will have a natural and full appearance, we check the site with a sizer (test implant) that is the same size as the implant itself. It is important that the implant lies in the socket like a gloved hand. After this check, the sizer is removed and hemostasis is performed. A compress or gauze with 10 ml Bupivacaine is placed around the external upper quadrant of the ossicle between the pectoralis major and pectoralis minor. The gauze is left in for 10 minutes and then removed to make additional site rinsing with Betadine. Finally, the breasts are enlarged, and the wound is sewn in two layers. Additionally, analgesia of the muscle itself is performed through a small puncture incision in the axillary region - 5 ml of Bupivacaine per side -if performed without ultrasound guidance, nerve injury is possible. If nerve injury occurs, it will take months for everything to return to baseline as before surgery. This long-term analgesia of the entire region bothers patients in their daily activities. Postoperatively, patients receive a combination of Paracetamol and Ibuprofen for pain management. Normabel (Diazepam) 5 mg is also introduced into therapy for the first few days to relax the muscles. The goal is for patients to have minimal postoperative pain with a sense of pressure present. The patients are mobilized within 2 hours following their operation and are usually ready to go home after 4 hours.

Pictures from the operating room(Fig.6,7,8,)



Figure 6. Bupivacaine 5mg/ml, 10 ml, infiltration on the gauze

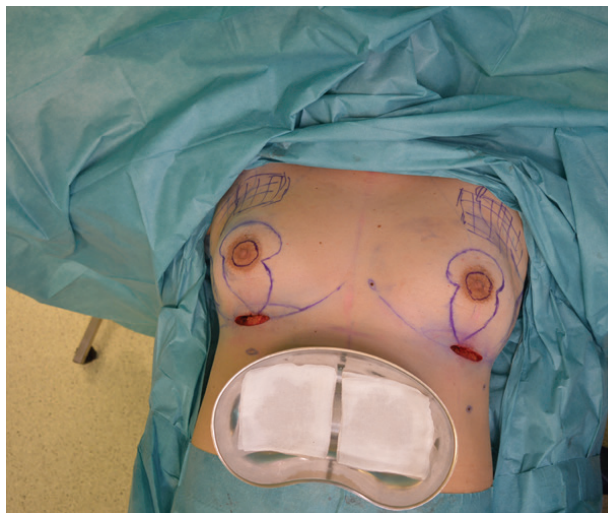


Figure 7. Markings in the upper central and lateral part of the chest where 1 gauze will be introduced for the side. The dosage is 10 ml of bupivacaine 5 mg / ml per gauze.

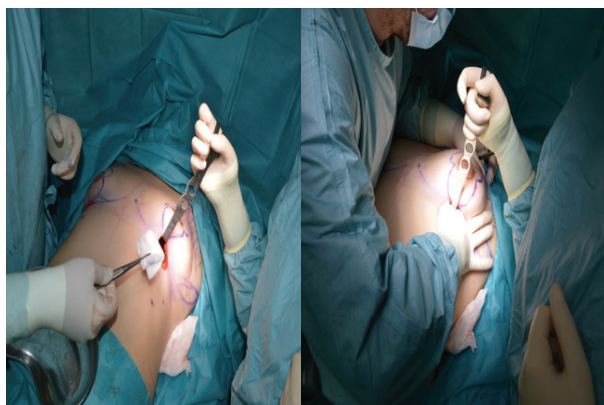


Figure 8. Procedure for applying 10 ml of Bupivacaine 5 mg / ml to gauze in the upper central and lateral part of the breast.

Results

Patients and pain analysis

Number of patients for breast correction 2020-2021 there were 274 patients. Of this number of patients, 215 entered the study. These patients were divided into two groups: a control group and another in which analgesia was used in terms of medial and lateral pectoral nerve block (Tbl 2). The most important period is the first 7 days, so that this part would be analyzed after 7 days, the pain is rare and minimal. List a couple of

sions are based on our experience and comparison of the VAS pain scale with patients who did not have this type of pectoralis major block. To confirm this effectiveness-

of additional analgesia, it is necessary to have a larger sample pool. This is what we will be collecting in the coming months and years.

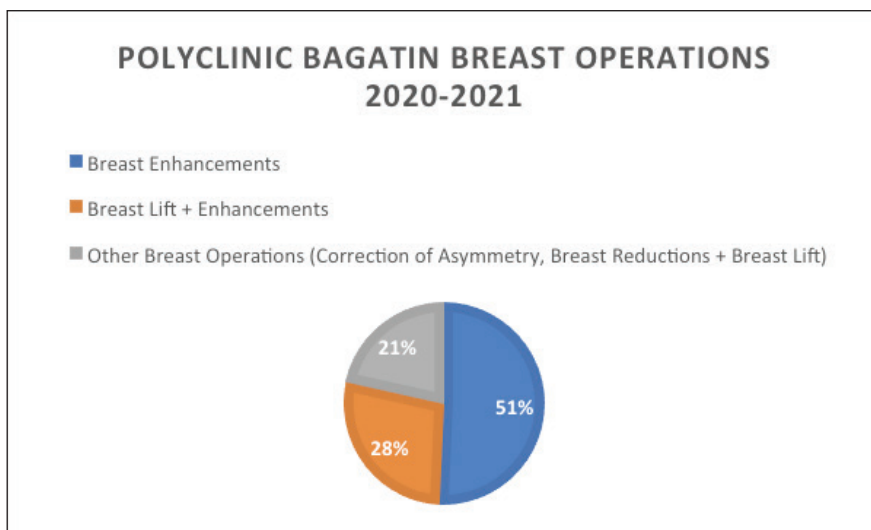


Figure 10 Polyclinic Bagatin breast operations in 2020-2021.

Discussion

Wound infiltration or direct infiltration of a local anesthetic into a surgical wound is one of the simplest techniques of regional analgesia and at the same time avoids the risks of other techniques such as pneumothorax, pleural puncture, and high-volume intravascular injection. Unfortunately, there is little data from high-quality randomized clinical trials that support reliable effective analgesia (18). A larger number of RKS failed to find a statistically significant analgesic benefit (19,20,21-33), while a smaller number of others found a minimal reduction in pain outcomes that reached statistical significance in just a few postoperative hours (28-33). Wound infiltration did not show a significant effect on opioid use or on the side effects associated with them. As an example, in a relatively small RKS ($n = 79$) comparing wound infiltration with 0.25% bupivacaine with placebo in patients who underwent multiple types of breast surgery, the incidence was low in both groups, without revealing the difference between the two. Looking at the previously mentioned research, there is little data that show that infiltration of the wound with local anesthetic improves the postoperative experience of patients.

Several types of interfascial layer blocks have been described specifically for breast surgery. The Pecs I

block was first described in 2011 with a local anesthetic deposited in the layer containing the pectoral nerves between the pectoralis major and pectoralis minor muscles (17). The following year, a modified version of this block called Pecs II for axillary dissections was described with the goal of increasing the number of nerves involved to include intercostobrachial, intercostal 3-6, and long thoracic nerves (34). This technique has been described primarily for breast augmentation (35,36), with one retrospective series reporting a reduction in pain findings to 8 hours when a pectoralis block was added to a paravertebral block and then compared to historical controls with paravertebral blocks alone (37). Respondents with regional blocks reported pain scores approximately 50% lower than controls during the first 24 postoperative hours; far less opioids were needed within the first 12 hours. In addition to the above, there were reduction of nausea, vomiting and sedation in the recovery room. Discharge was earlier as well. To date, there are very few randomized clinical data on which to base recommendations for Pecs blocks over paravertebral and epidural analgesics, but if future research confirms the effectiveness of these blocks, these blocks would be considered a standard for breast surgery because of their ease of application and relatively low potential of complications.

Local infiltration anesthesia (LIA) technique to obtain regional anesthesia and vasoconstriction of the skin and subcutaneous tissues is routinely adopted for primary breast augmentation. Our series evaluates advantages and disadvantages of LIA in elective augmentation and augmentation/mastopexy breast surgery as well as patients' response to this procedure.

Conclusion

Single shot infiltration with bupivacaine improves postoperative pain control after breast surgery. Perioperative physicians should consider delivering the LIA earlier during the procedure as opposed to solely at the time of wound closure. This is good for wound analgesia, but for muscle analgesia bupivacaine on the sterile gauze between the pectoralis major and minor muscles, is a good adjunct to local analgesia of the inframammary wound. The benefits, risks, and usefulness either alone or in conjunction with other peripheral nerve blocks, of this newly described block, have yet to be clarified, and require future investigation.

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Sažetak

OPTIMALNA ANALGEZIJA ZA KIRURGIJU DOJKE UBRZALA JE OPORAVAK U DNEVNOJ KIRURGIJI (LIA)

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Estetska kirurgija dojke najčešći je operativni zahvat na tijelu u Poliklinici Bagatin. Prema statistici američkog udruženja plastičnih kirurga (ASPS-u) 2020. povećanje grudi implantatima je bilo na 5-om mjestu svih estetskih operativnih zahvata i na 2-om mjestu operacija na tijelu odmah iza liposukcije i iznosio je 193,073. Uz navedene zahvate popularni su zahvati podizanje grudi (87,051) i smanjenja (redukcije) grudi (33,574). Zbog velike popularnosti ovih zahvata i velikog udjela istih u svakodnevnom operativnom programu bitna je adekvatna analgezija i oporavak pacijentica koje idu na estetske operacije korekcije grudi. Ovaj segment je bitan jer danas više nije dovoljno samo da operacija prođe dobro i da pacijenti imaju dobar rezultat nego je bitan i sam postupak od uvođenja u anesteziju do ranog i kasnog oporavka i brzog povratka svakodnevnim aktivnostima i poslu.

Key words: Estetska kirurgija dojke, povećanje grudi, analgezija dojke, postoperativni oporavak.