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ORIGINAL ARTICLE

Role of ropivacaine infiltration analgesia in bilateral reduction mammaplasty

Rôle de l'infiltration de ropivacaïne dans l'analgésie des plasties mammaires de réduction bilatérales

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KEYWORDS
Analgesia;
Surgical procedure;
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Summary
Introduction. — Bilateral reduction mammaplasty (BRM) is a common procedure in plastic surgery. Our study aims to determine whether single-shot infiltration with ropivacaine during surgery reduces postoperative pain and decreases analgesic consumption.
Methods. — In a prospective and monocentric study, all women operated by a single senior plastic surgeon, for whom BRM had been performed were included. The same surgical technique was performed for all patients (a superior pedicle, wise-pattern BRM with a closed-suction drainage). During the first half first part of the study period, none of the patients received ropivacaine infiltration (control group) and during the second half, all the patients received this infiltration (ropivacaine group). Infiltration was performed with a 20 mL solution of ropivacaine per side. Analgesic consumption and pain intensity were recorded during hospitalization and following discharge.
Results. — Forty-nine patients were divided into two groups (29 in the ropivacaine group and 20 in the control group). The ropivacaine group had a significantly lower consumption than the control group on all analgesics (paracetamol, tramadol, nefopam and morphin) ($P < 0.001$). Pain measurement reflected significantly lower scores in the ropivacaine group, both at four hours and three days postoperatively ($P < 0.001$). This difference was no longer significant at day 7 postoperatively ($P = 0.147$).

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Conclusion. — Single-shot ropivacaine infiltration during surgery reduces postoperative pain and decreases the analgesic consumption. With this peroperative infiltration, BRM can be performed with good pain control and moderate analgesic consumption, limiting side effects.

MOTS CLÉS
Analgésie ;
Procédure chirurgicale ;
Plasties mammaires

Résumé
Introduction. — Les plasties mammaires de réduction bilatérales (PMR) sont des interventions fréquentes en chirurgie plastique. L'objectif de notre étude était de déterminer si une infiltration unique peropératoire de ropivacaïne réduit les douleurs et la consommation d'antalgiques postopératoires.
Méthode. — Dans une étude prospective et monocentrique, toutes les patientes opérées par un même chirurgien sénior ayant subi une PMR ont été incluses. La même technique a été réalisée pour toutes les patientes (pédicule supérieur, avec un patron de Wise et avec un drainage). Durant la première moitié de l'étude, les patientes ne bénéficiaient pas d'infiltration de ropivacaïne (groupe témoin) et durant la seconde moitié, toutes les patientes bénéficiaient de cette infiltration (groupe ropivacaïne). L'infiltration était de 20 mL de ropivacaïne par côté. La consommation d'antalgiques et les douleurs postopératoires étaient enregistrées durant l'hospitalisation et après le retour à domicile.
Résultats. — Quarante-neuf patientes ont été incluses en deux groupes (29 dans le groupe ropivacaïne et 20 dans le groupe témoin). Le groupe ropivacaïne présentait une consommation postopératoire d'antalgiques (paracétamol, tramadol, néfopam et morphine) significativement plus faible que le groupe témoin ($p < 0{,}001$). Le groupe ropivacaïne présentait significativement moins de douleurs postopératoires (relevées à 4 heures et 3 jours postopératoires) ($p < 0{,}001$). Cette différence n'était plus significative à 7 jours postopératoires ($p = 0{,}147$).
Conclusion. — Une infiltration unique peropératoire de ropivacaïne réduit significativement les douleurs postopératoires et la consommation d'antalgiques. Grâce à cette infiltration, les PMR peuvent être réalisées avec un contrôle de la douleur efficace et une consommation modérée d'antalgiques, limitant ainsi les effets secondaires.

Introduction

Bilateral reduction mammaplasty (BRM) is a common procedure in plastic surgery (41,309 procedures in 2014 in the USA [1]). Its realization in ambulatory surgery requires good pain control and moderate analgesic consumption [2]. The use of analgesics, grade III in particular, is responsible for side effects (nausea, vomiting) difficult to manage at home.

Numerous studies have revealed the role of ropivacaine on postoperative pain control in breast cancer surgery, both in augmentation mammaplasties and in BRM [3—8]. But no study has so far shown the effect of peroperative ropivacaine infiltration on postoperative analgesic consumption in the latter procedure.

Our prospective, monocentric study aims to determine whether single-shot infiltration with ropivacaine during surgery reduces postoperative pain and decreases analgesic consumption.

Methods

In a prospective and monocentric study, all women operated on by a single senior plastic surgeon for whom BRM had been performed between June 1, 2014, and May 31, 2015 were included and were operated with the same surgical technique: a superior pedicle, wise-pattern BRM. Closed-suction drainage was implemented for all patients. This study was approved by the hôpital Saint-Louis Review Board.

During the first half first part of the study period, none of the patients received ropivacaine infiltration (control group); during the second half, all the patients received this infiltration (ropivacaine group). Infiltration was performed with a 20 mL solution of ropivacaine per side (10 mL ampoule with 7.5 mg/mL and 10 mL ampoule with 2.5 mg/mL: totalling 20 mL with 5 mg/mL): 3 mL into the pectoral muscle, 2.5 mL into the medial and 2.5 mL into the lateral breast pillar, 6 mL into the horizontal scar, 3 mL into the vertical scar and 3 mL into the orifice drain.

All patients received a standardized pain control regimen given on an as-needed basis throughout their postoperative course. Patients were sent home at the first postoperative day with a standardized prescription. Analgesic consumption and pain intensity were recorded by nurses blinded to patient allocation during hospitalization. Following discharge, patients were asked to complete a written self-assessment.

Quantitative variables are expressed as median, mean and standard deviation, and qualitative variables, as percentage and frequency. Comparisons of qualitative parameters were performed with the Chi^2 test or the Fisher exact test. The assumption of normality for quantitative parameters was assessed with the Shapiro—Wilks test; student *t*-test or Mann-Whitney *U* test were used according to the distribution. Comparison of postoperative pain was performed with an analysis of variance on repeated measures according to