

# The Role of Liposomal Bupivacaine in Body Contouring Surgery: A Scoping Review

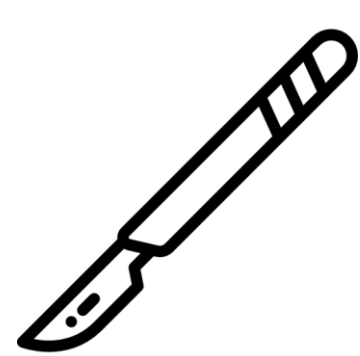
Christopher Branstetter, BS<sup>1</sup>, Juan Isaac, MD<sup>2</sup>, Mary K. Lee, BS<sup>1</sup>, Jose Castro Garcia, MD<sup>2</sup>, Humberto Palladino, MD<sup>3</sup>

1) LSUHSC-NO School of Medicine 2) Mayo Clinic Department of Plastic and Reconstructive Surgery 3) Top Aesthetics Plastic Surgery (Ft. Lauderdale, FL)

## Background



Body contouring procedures (e.g., abdominoplasty, lipoabdominoplasty, belt lipectomy) are increasingly performed following massive weight loss, GLP-1 use, and lifestyle modification<sup>1</sup>



Extensive soft tissue dissection causes significant postoperative pain and is traditionally managed with opioid-based regimens<sup>2</sup>



Liposomal bupivacaine (LB) is a long-acting formulation of bupivacaine that may reduce postoperative pain and opioid requirements in body contouring surgery<sup>3</sup>

## Methods

### Design

Scoping review conducted in accordance with PRISMA-ScR guidelines

### Data Sources

PubMed, Embase, CINAHL, Cochrane Library, Web of Science

### Inclusion Criteria

Studies evaluating LB use in body contouring surgery  
Reported outcomes: pain scores, opioid consumption, or recovery metrics

### Exclusion Criteria

Review articles, non-human studies, breast-only procedures, non-plastic surgery populations

### Synthesis

Qualitative synthesis performed due to heterogeneity in outcome reporting

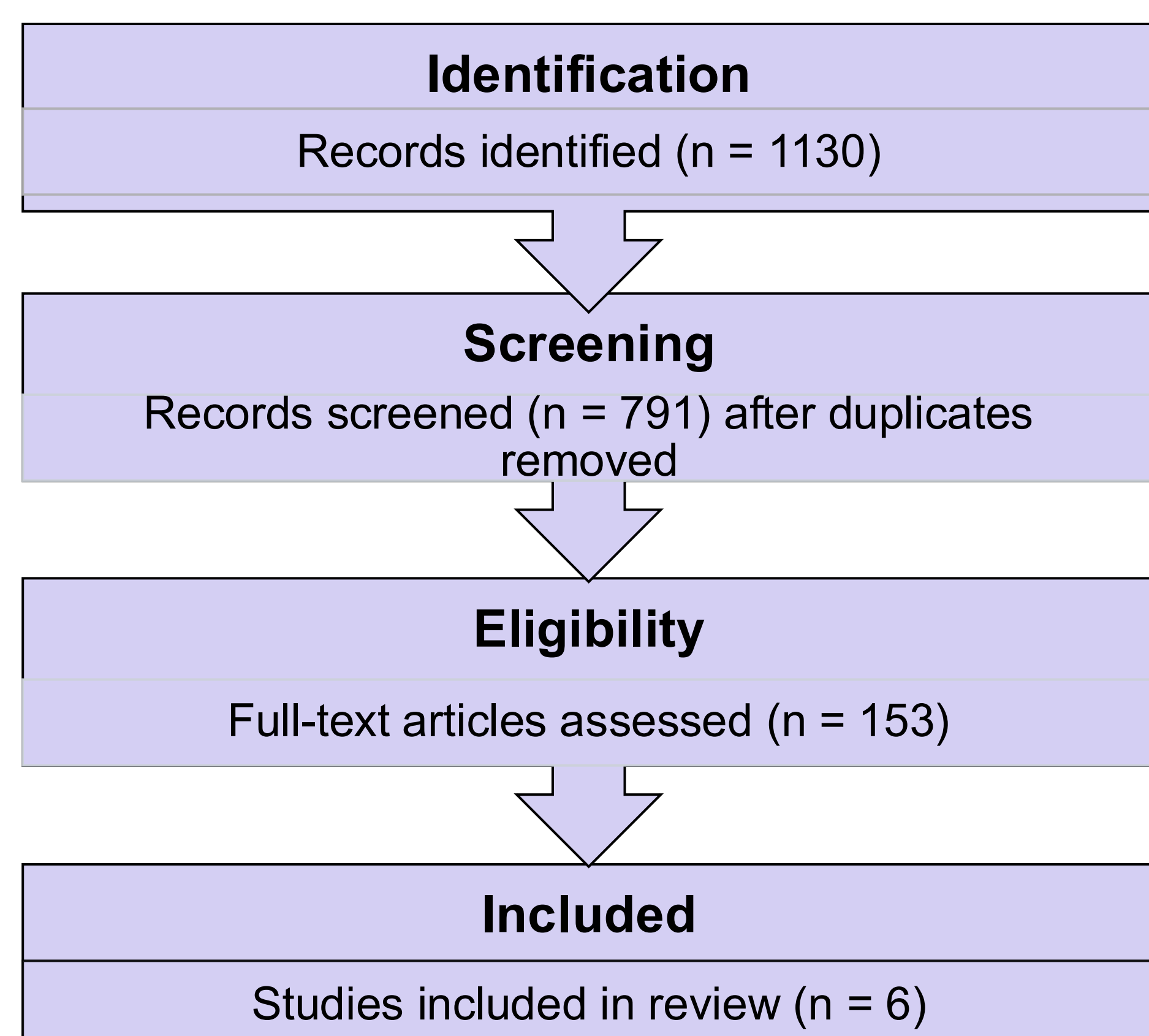


Figure 1. PRISMA flow diagram of study selection, from 1,130 identified records to 6 included studies.

Study design	6 studies (2013-2022); retrospective cohorts & case series
Sample Sizes	13-202 patients
Procedures	Abdominoplasty with rectus plication, lipoabdominoplasty, Fleur-de-Lis abdominoplasty, belt lipectomy.
LB Delivery	Local infiltration, field blocks, TAP blocks

Table 1. Characteristics of included studies on liposomal bupivacaine in body contouring surgery.

## Results

### Pain Scores

- Consistently low across studies (all delivery methods)
- Postoperative pain was characterized using the Visual Analog Scale (VAS) or Numeric Rating Scale (NRS)
- Morales<sup>4</sup>: 5.25 in PACU → 2.8 on POD7 (NRS)
- Edwards<sup>5</sup>: ≤4.3 through POD3 (NRS)
- Oppenheimer<sup>6</sup>: ≤2.5 from POD1-3 (VAS)
- Shauly<sup>7</sup>: 0.3-0.5 on POD1 (VAS); near resolution by 4–6 weeks
- Tran<sup>8</sup>: ↓ pain vs infusion pump early (<12 hrs), no sustained difference

### Opioid Consumption

- Tran<sup>8</sup>: 14.96 vs 33.83 mg MME (48 hrs, p=0.003)
- Shauly<sup>7</sup>: 95% NSAID-only by POD7
- Straughan<sup>9</sup>: 332.3 → 100.3 MME prescribed (p<0.001)
- Others<sup>4-6</sup>: ↓ opioid use (limited quantitative data / controls)

### Functional Recovery

- Early ambulation reported on POD1 with return to activity: ~6.4 days<sup>4</sup>
- LOS: rarely reported (mostly outpatient)

## Discussion

- Liposomal bupivacaine demonstrates consistent opioid-sparing effects and low postoperative pain scores across body contouring procedures
- Current evidence is limited by small, retrospective, and heterogeneous studies, restricting definitive conclusions on efficacy
- The higher acquisition cost of liposomal bupivacaine may not yet be justified by the current body of evidence<sup>10</sup>

## References

1. Sadeghi P, Duarte-Bateman D, Ma W, et al. Post-Bariatric Plastic Surgery: Abdominoplasty, the State of the Art in Body Contouring. *J Clin Med*. Jul 25 2022;11(15)doi:10.3390/jcm11154315
2. Norwich A, Narayan D. Pain Management and Body Contouring. *Clin Plast Surg*. Jan 2019;46(1):33–39. doi:10.1016/j.cps.2018.08.005
3. Vyas KS, Rajendran S, Morrison SD, et al. Systematic Review of Liposomal Bupivacaine (Exparel) for Postoperative Analgesia. *Plast Reconstr Surg*. Oct 2016;138(4):748e–756e. doi:10.1097/PRS.0000000000002547
4. Morales R, Mentz H, Newall G, Patronella C, Masters O. Use of abdominal field block injections with liposomal bupivacaine to control postoperative pain after abdominoplasty. *Aesthetic Surgery Journal*. 2013;33(8):1148–1153. doi:10.1177/1090820X13510720
5. Edwards MC, Sorokin E, Brzeziński M, et al. Impact of liposome bupivacaine on the adequacy of pain management and patient experiences following aesthetic surgery: Results from an observational study. *Plast Surg (Oakv)*. 2015;23(1):15–20. doi:10.4172/plastic-surgery.1000904
6. Oppenheimer AJ, Fiala TGS, Oppenheimer DC. Direct Transversus Abdominis Plane Blocks With Exparel During Abdominoplasty. *Annals of plastic surgery*. 2016;77(5):499–500. doi:10.1097/SAP.0000000000000659
7. Shauly O, Goel P, Gould DJ. Painless, Drainless Lipoabdominoplasty: A Retrospective Study of Pain Following Lipoabdominoplasty Utilizing Liposomal Bupivacaine and a Modified Enhanced Recovery After Surgery Protocol. *Aesthetic Surgery Journal Open Forum*. 2022;4((Shauly O.) Department of Plastic Surgery, Emory University School of Medicine, Atlanta, GA, United States(Goel P., pedram.goel@gmail.com) Department of Plastic Surgery, University of California, Irvine, Orange, CA)doi:10.1093/asjof/ojac049
8. Tran JP, Padilla PL, McLaughlin J, Aliano KA, Doan M, Phillips LG. Comparative analysis of intraoperative use of Liposomal Bupivacaine (Exparel) and On-Q pump for postoperative analgesia in abdominal body contouring surgery in massive weight loss patients. *Clin Surg* 2016; 1. 2016;1080
9. Straughan DM, Lindsey JT, McCarthy M, Legendre D. Enhanced Recovery after Surgery Protocol with Ultrasound-Guided Regional Blocks in Outpatient Plastic Surgery Patients Leads to Decreased Opioid Prescriptions and Consumption. *Aesthetic Surgery Journal*. 2021;41(8):NP1105–NP1114. doi:10.1093/asj/sjab137
10. Little A, Brower K, Keller D, Ramshaw B, Janis JE. A Cost-Minimization Analysis Evaluating the Use of Liposomal Bupivacaine in Reconstructive Plastic Surgery Procedures. *Plast Reconstr Surg*. Apr 2019;143(4):1269–1274. doi:10.1097/PRS.00000000000005435