

## **Abstract**

### Background:

Capsular contracture, a phenomenon characterized by the formation of a fibrous capsule around a breast implant after an augmentation mammoplasty, often results in pain, breast firmness, and distortion of the implant. Despite the prevalence of breast augmentation, comprehensive analysis of factors potentially related to capsular contracture remains limited.

### Objectives:

The aim of this meta-analysis was to investigate how the implant surface, plane of implant placement, and implant type affect rates of capsular contracture.

### Methods:

A systematic review and meta-analysis were performed in PubMed MEDLINE, EMBASE (OvidSP) and Cochrane library. Comparison groups included smooth versus textured implants; subpectoral versus prepectoral placement of the implant; saline versus silicone implants. Odds ratios (OR) were calculated for capsular contracture for each of these groups.

### Results:

Twenty-four studies met the inclusion criteria. Smooth implants had significantly higher capsular contracture rates compared with textured implants [OR = 2.80 (95% confidence interval [CI]: 1.92, 4.08)]. Subpectoral placement of the implant was associated with significantly lower capsular contracture rates compared with prepectoral placement [OR = 0.35 (95% CI: 0.25, 0.50)]. There was no statistically significant difference between silicone and saline breast implants in capsular contracture rates [OR = 0.39 (95% CI: 0.02, 6.69)].

### Conclusions:

Textured-surface implants are associated with lower rates of capsular contracture compared to smooth-surface implants after breast augmentation. Implants placed in the subpectoral plane significantly reduce capsular contracture rates compared to prepectoral placement. There were no significant differences in capsular contracture rates between saline and silicone-filled implants.