Pneumothorax as a complication of augmentation mammoplasty has rarely been reported in the literature. In this article, we describe a case of bilateral iatrogenic pneumothoraces following aesthetic breast augmentation surgery in a thin patient who was a heavy smoker. Symptoms appeared progressively on the second postoperative day. Clinical examination showed abnormal pulmonary ventilation of both thoracic bases. Bilateral pneumothoraces were demonstrated by radiography and confirmed by computed tomography. The patient improved after surgical placement of 2 chest tubes, which were removed after 6 days. The authors suggest that a patient be informed of the risk of iatrogenic pneumothorax before undergoing aesthetic augmentation mammoplasty, and recommend extreme caution when injecting local anesthetic, particularly in the submuscular pocket of a very thin patient. (Aesthetic Surg J 2005;25:49-52.)

Breast augmentation has become one of the most frequently performed operations in aesthetic surgery. From Czerny’s first recorded procedure in 1895 to the present, improvements in surgical techniques as well as the use of new materials by implant manufacturers have led to dramatic improvement of aesthetic results and lower complication rates.

The most frequently reported early complications are hematoma, seroma, infection and implant leakage. The most reported late complication is periprosthetic capsular formation or fibrosis. Although rarely recognized as a complication of breast surgery, pneumothorax is suspected to be much more common than generally acknowledged.

Such a complication could originate from the injection of local anesthetic in the deep thoracic plane, the dissection of the pectoralis major muscle with lesion of the pleura, and, least likely, from ventilatory trauma when operating under general anesthesia.

The preoperative medical condition of the patient plays a great role when evaluating the risks of such a complication; it is well known that patients with asthma or a history of heavy smoking are at a higher risk of developing a pneumothorax. In this article, we report a case of iatrogenic bilateral pneumothoraces that became symptomatic 2 days after breast augmentation surgery.

Case Report

A 55-year-old, very active woman was admitted to “Laclinic” for surgical treatment to correct mammary hypotrophy and ptosis. An augmentation mammoplasty combined with a mastopexy was indicated. The patient presented with a low Body Mass Index of 16 (weight = 42 kg, height = 1.62 m). She had a history of heavy smoking (2 packs/day for 35 years), but her surgical and medical history were otherwise unremarkable. There was no indication of drug use or alcohol abuse (Figure 1).

The patient was premedicated with midazolam 5 mg orally a half-hour before entering the operating room. Surgery was performed with the patient in deep sedation, using Propofol perfusor at 20 mL/hr combined with the injection of local anesthetic. We normally inject 10 mL of a lidocaine 1% solution with an adrenalin concentration of 1:200,000 at the incision site for each breast (using either an axillary, transareolar, periareolar, or inframammary approach), 20 ml of a lidocaine 0.5% solution for the perimammary area and, finally, 20 ml of a lidocaine 0.25% solution for the subglandular or the
subpectorald plane. At the end of the procedure, 10 mL of
a long-lasting anesthetic (Carbostesine) was injected into
the pocket to provide postoperative analgesia. Oxygen
was administered through a nasal cannula and this
allowed us to maintain physiologic saturation values dur-
ing and after the surgery, so that mechanical ventilation
could be avoided. Surgery was completed without any
problems or complications (Figure 1).

On the first postoperative day, the patient complained
of minor back pain. It was assumed that the pain resulted
from the uncomfortable positioning of the patient during
surgery. On the second day, the patient was discharged
after the removal of the drains, as usual. No other com-
plaint was made by the patient, who was able to walk
normally, without dyspnea. But once at home, her back
pain worsened and a progressive dyspnea developed in the
evening, leading to an emergency call to her physician.
The surgeon suspected a pulmonary embolism and asked
for complementary investigations at the nearest hospital.

At her arrival in the emergency room, the patient pre-
sented with dyspnea at rest without any other distur-
bances of her vital parameters. The clinical examination
showed an abnormal pulmonary ventilation of both tho-
racic bases. The local status of the breast was normal,
with no healing or scar problems. The laboratory investi-
gations showed no pathologic results. Radiography of the
chest showed bilateral pneumothoraces (6 cm on each
side) (Figure 2). A thoracic computed tomography (CT)
scan confirmed the presence of bilateral pneumothoraces,
combined with a small amount of pleural fluid accumula-
ton on each side.

After surgical placement of 2 chest tubes, the patient
showed clinical and radiologic improvement. Both tubes
were removed after 6 days (Figure 3).

Discussion

In our case, the patient suffered from normal tension
bilateral pneumothoraces, so that we will concentrate our
discussion on this particular pathology.
Pneumothorax can occur spontaneously or result from
trauma or iatrogenesis. The cause is always a lesion of
the pleura, which can be intrathoracic (ruptured emphy-
sema’s bubble, alveolar distention, tracheal, esophageal,
diaphragmatic or mediastinal lesion)\(^{4-6}\) or extrathoracic
(truma of the thoracic wall, perforation, or injec-
tion)\(^{2,3,9}\) \(^{2}\) The symptomatology of a pneumothorax can
appear immediately or after hours or days. The symp-
toms are respiratory thoracic pain, a growing dyspnea of
variable intensity, and cyanosis. In the case of an external
lesion of the chest, subcutaneous emphysema can be

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*Figure 1. A, C, Preoperative views of a 55-year-old woman. B, D, Postoperative views 3 months after augmentation mammoplasty, mastopexy, and bilateral pneumothorax drainage.*
observed. The pulmonary auscultation can be normal or diminished on the affected side. Methods of diagnosis are the clinical examination, chest radiography and, eventually, CT. The treatment depends on the extent of the pleural detachments and on the clinical signs, and can range from simple observation and regular radiographic controls to thoracic aspiration drainage for a few days, as was performed in this case.

The incidence of pneumothorax is higher when other pulmonary pathologies, such as heavy smoking, are present. In this case, the patient’s slenderness and heavy smoking habits probably increased the risk for an iatrogenic pleural lesion. A review of the literature revealed only 3 articles reporting pneumothorax as a possible complication of augmentation mammoplasty. Osborn and Stevenson reported that 1 out of 3 members of the California Society of Plastic Surgeons experienced a pneumothorax following a breast augmentation surgery at least once in their career, and 1 out of 10 experienced such complications. Fifty-five percent of the encountered pneumothoraces were diagnosed during surgery. It is always difficult to define the precise etiology. Forty-three percent of the iatrogenic pneumothoraces were considered to be the consequence of an intraoperative laceration of the pleura, 37% of a needle puncture at the time of local anesthesia, 16% the result of ruptured pulmonary blebs during or after procedure, and 3% were caused by high ventilation pressures during anesthesiology. In 24% of the cases, no injection of local anesthetic was performed in or around the mammary gland.

**Conclusion**

When operating in the thoracic region, there is a real risk of provoking an iatrogenic pneumothorax by a pleural lesion. It can occur when placing an infracavicular catheter, injecting local anesthetic, or as a result of excessive ventilation pressure during administration of general anesthesia. When occurring during breast surgery, 80% of the pneumothoraces are iatrogenic in origin. Therefore, one should use a low-diameter needle for placement of the local anesthetic, and inject tangentially to the thoracic wall.

In the reported case, the patient was very thin and a heavy smoker, so it was uncertain whether the bilateral pneumothoraces were, in fact, iatrogenic in origin. They could also have occurred spontaneously, given the presence of underlying emphysema bubbles in the lungs of heavy smokers.

We would recommend addition of this possible complication to the preoperative patient’s information sheet,
and would emphasize the increased risk for heavy smokers or extremely thin patients with atrophic muscles. It is also essential to search for signs of pneumothorax if thoracic postoperative back pain develops, and to treat any such occurrence as an emergency, in order to avoid deleterious consequences for the patient. ■

References