



ORIGINAL ARTICLE

## Mondor's disease: a complication of breast surgery

### La maladie de Mondor : une complication de la chirurgie mammaire

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#### KEYWORDS

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**Abstract** Mondor's disease is a rare but not uncommon complication of breast surgery. This problem is commonly described as the thrombophlebitis of the superficial thoracoabdominal veins. Symptoms combine painful contracture occurring in the sub-mammary region and/or in the axillary region, rising during arm abduction. The contracture located in the axillary region usually join the epitrochlea. Based on a series of 8 patients, the fascial hypothesis is developed. All the patients were treated by LPG and myo-fascial techniques with a complete relief of pain in 10 days.

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#### MOTS CLÉS

Maladie de Mondor;  
Seins

**Résumé** La maladie de Mondor est une complication relativement rare en chirurgie plastique mammaire. Elle est souvent décrite comme une thrombophlébite des veines sous-cutanées au niveau du mur thoracoabdominal antérolatéral. La symptomatologie la plus fréquente consiste en l'apparition d'une corde douloureuse sous-cutanée accompagnée d'une tension et d'une rétraction de la peau. Cette symptomatologie apparaît aux niveaux sous-mammaire et axillaire. Fondé sur l'étude de huit patientes ayant présenté la maladie de Mondor après chirurgie mammaire, nous avançons une hypothèse étiologique basée sur une atteinte fasciale. Toutes ces patientes ont bénéficié d'un traitement LPG et myofascial. Une guérison complète a été observée dans les dix jours.

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#### Introduction

Plastic breast surgery groups together the most commonly performed plastic surgery interventions. It involves breast reductions or augmentations,

mastopexies, or reconstruction after tumour excisions, mastectomies, or for birth defects. Even if the outcomes are generally excellent, specific complications exist. The most common are infections (0.6% to 35%), haematomas (1% to 6), capsular

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contracture (0.5% to 20%), seromas (0.1% to 4%), skin necrosis (0.1% to 1.8%), wound dehiscence (0.4% to 5.6%), creases near the prosthesis (20%), and implant ruptures (0.3% to 23.9%) [1-6]. Most of them have contributing factors and are specific to certain interventions. Aside from these classic complications, Mondor's disease is also worth mentioning even though it does not have a clear specificity for this type of surgical intervention. However, it is a relatively rare complication, often described as a thrombophlebitis of the subcutaneous veins in the anterolateral thoracoabdominal wall [6-12]. However, its aetiopathogenesis has not yet been clearly established, not its true incidence.

Based on general breast surgery practice, we will study its incidence and expose our treatment approach. An aetiopathogenetic hypothesis will also be proposed.

## Materials and Methods

We studied 504 patients who underwent breast surgery between 1 January 2001 and 30 December 2003. Breast augmentations, reductions, reconstructions, and lifts accounted for 21%, 40%, 28%, and 11% of the cases, respectively. All the records were reviewed to discover the occurrence of complications. How it developed, time to onset, and treatment were studied. A diagnosis of Mondor's disease is considered when a painful, raised, indurated cord is present in the inframammary region or in the axillary crease, extending transversally on the inner side of the arm towards the elbow.

Once diagnosed, patients are treated by a kinesiotherapist who follow a treatment protocol including two techniques. The LPG® technique treats the connective tissue using a skin fold suction mechanism between two rollers moved along the treatment area. The main long-term effects are: fibroblast stimulation and connective matrix restructuring leading to better vascularization and better regional drainage [13]. In the treated cases, the immediate effect produced was tissue decongestion which reduced the inflammatory reaction and local muscle spasms, improving symptoms.

Myofascial techniques, applied in osteopathy, treat the muscle, ligament, and fascial tissue. Using manual

techniques (going from the axillary crease to the hand in this case), the therapist acts on both the muscles (pectoralis major, latissimus dorsi, arm and forearm muscles) and the fascial tissue (superficial and deep fascia) leading to: muscle spasm relaxation, better venous and lymph drainage, which also contributes to decongesting the inflammatory region and simulating the hypotonic muscles via the extensor reflex [14].

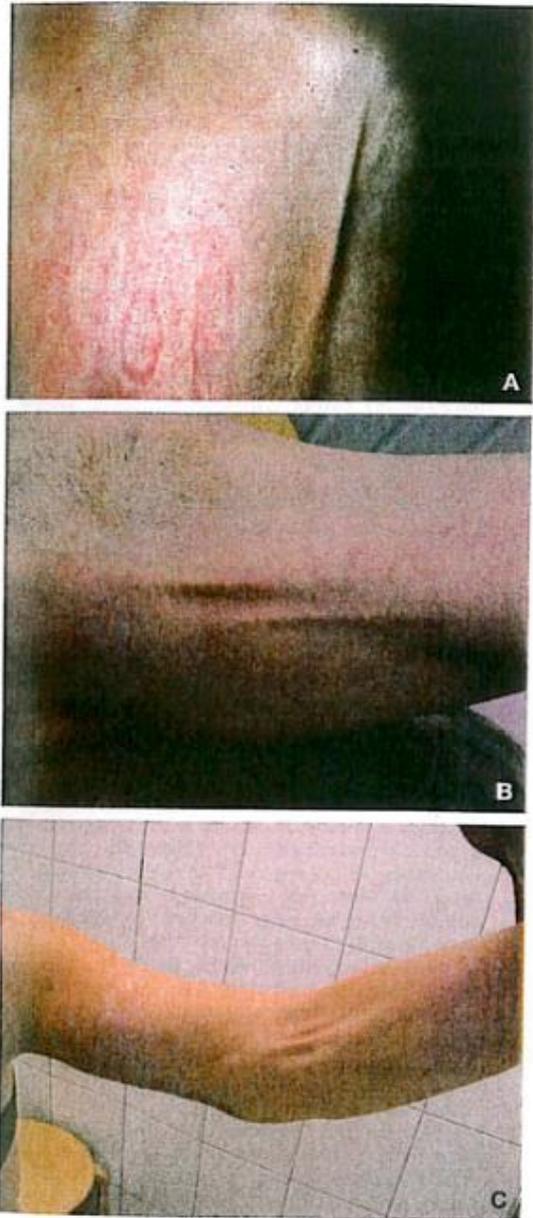
The two techniques, which have been shown to be effective, can be used alternating one for the other, but if the therapist decides to use only one, the manual myofascial treatment should be preferred as its action is more comprehensive and more complete. Improvements in symptoms under the prescribed treatment were quantified over time.

## Results

Eight patients presented with clinical characteristics compatible with a diagnosis of Mondor's Disease. The symptoms observed included the onset of a tender cord under pressure, near the breast, accompanied by a larger or smaller similar cord in the homolateral axillary crease extending up to the elbow crease (Fig. 1). The pressure and pain, reported as a burning feeling, in these cords increases during upper limb abduction. There is a concomitant decrease in shoulder function. Four patients experienced full symptomatology, while one only presented with an inframammary cord and three others with predominant axillary cords extending towards the elbow. All these patients experienced these symptoms between 10 and 15 days postoperative. The patients' ages ranged between 43 and 45 years.

The surgeries performed were two bilateral breast reductions (full symptomatology), one bilateral breast lift (full symptomatology), two breast augmentations (one mammary symptomatology and one full symptomatology), one breast reconstruction with prosthesis with no axillary clearance, one breast reconstruction with a latissimus dorsi flap and prosthesis, and one DIEP breast reconstruction with no prior axillary clearance (axillobrachial symptomatology).

All these patients underwent LPG® treatment and myofascial stretching. We observed complete recovery within ten days in all observed cases.



**Figure 1** Localised adhesions in the inframammary region (A), in the axillary region (B), extending towards the elbow crease (C).

## Discussion

Mondor's disease is generally considered to be a rare complication of breast surgery, characterised in the literature by thrombophlebitis of the subcutaneous veins in the anterolateral thoracoabdominal wall. The most commonly cited veins are the thoracoepigastric veins, lateral thoracic veins, and superior epigastric veins. On occasion, the veins draining the upper half of

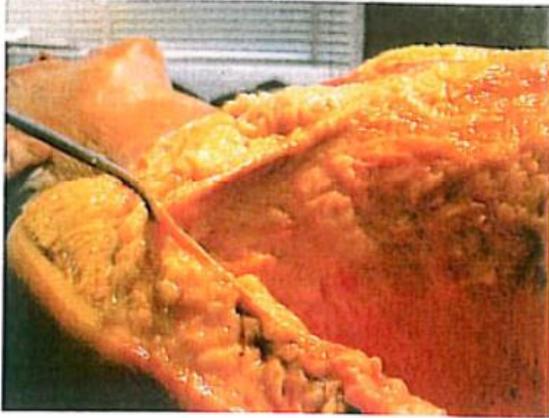
the breast are found to be involved [7, 8, 10]. Even if we call the reality of these venous thromboses into doubt, in terms of the cause, the lesion topography is similar in effect.

The origin of Mondor's disease is not currently defined and no cause has ever been demonstrated. Development of this disease has been reported after intense physical activity, trauma, surgery (breast augmentation, breast reduction, breast reconstruction, and breast biopsy), and several diseases (cancers, breast infection, inflammatory process such as rheumatoid arthritis) [7-12, 15, 16]. The diverse contributing factors and contexts of onset also contribute to not yet understanding the aetiopathogenicity.

The most common symptoms consist of the onset of a painful cord accompanied by pressure. Sometimes this cord is accompanied by erythema, a haematoma, a pearly appearance, and a fever [7, 8]. These symptoms persist for two weeks to six months and resolve after conservative symptomatic treatment such as rest, applying heat, and taking NSAIDs [7, 8].

Some authors think that it involves direct trauma to the thoracic veins [17]. Histological samples, taken in some cases reported in the literature, demonstrate the Mondor's disease can begin in the veins, but also in the arteries and lymph vessels [7]. In contrast, Marsch et al. propose a more lymphovascular origin rather than phlebitis [5]. In effect, an examination under an electronic microscope performed in a patient with this type of lesion revealed modifications to the lymphatic and venous system. The eight clinical cases that we described were observed during the immediate postoperative period. The 1.5% incidence, in our series, makes these cases not rare. However, this condition is rarely described in the context of the different complications observed after breast surgery.

In all the reported cases, in the absence of axillary clearance, we noted a more or less significant association between the tender cord located near the breast and a cord in the homolateral axillobrachial area. Similar symptoms were also described by Eastcott after radical mastectomy [18]. Catania also described similar transverse cords [8]. These authors think that these cords are due to a thickening of the vein wall or a thrombosis in the subcutaneous veins



**Figure 2** Superficial fascias.  
Evidence on a fresh cadaver.

draining towards the axillary crease where the blood flow may slow down. Unfortunately, from an anatomical perspective, there is no direct, continuous venous connection between the inframammary region and the elbow crease region. Moreover, abducting the homolateral upper limb amplifies the pressure on the mammary, axillary, and brachial cords. This cluster of signs makes us doubt the thrombotic origin of the disease. In effect, a continuous connection between the inframammary, axillary, and brachial regions exists physically through the superficial thoracic fascia (Fig. 2) continuing through the clavipectoral fascia linked to the superficial fascia of the arm [19]. In addition, putting pressure on one part of the cord accentuates the visibility of the other affected parts, reproducing pain at that level. Palpating the cord in the inframammary region, not adhering to the deep plane or the skin, corroborates this possibility. Lastly, the success of LPG® and myofascial treatments, in ten days, strengthens this hypothesis. It could thus be a contracture of the superficial fascia. This would be easily explained by the different technical manipulations applied to the breast tissue and thus to the superficial thoracic fascia during the different breast surgeries. During breast augmentation via the inframammary approach, the superficial fascia is incised then sutured during closing. The glandular excision performed during breast reductions, following by gland remodelling, could undoubtedly result in the genesis of this type of traction which could have repercussions along the directly fascia up to the axillary region.

Even if this aetiopathogenetic hypothesis, based on the clinical symptoms, seems to oppose the histological data, nothing contradicts the possibility of

vascular thrombosis in the midst of a fascial contracture. In effect, several studies have demonstrated the presence of microvascular occlusions during tissue contractures observed in Dupuytren's disease [20] or in hypertrophic scars or keloids [21-23].

## Conclusion

Mondor's disease is not a rare complication in breast surgery. Although superficial thoracic vein thrombosis has been invoked as an aetiology, post-traumatic contracture of the superficial fascia seems more likely to us. This condition, which could impair shoulder function, once correctly identified can be quickly and effectively treated with LPG® and myofascial techniques.

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