

3D CUSTOM-MADE IMPLANTS

For Correcting Pectus Excavatum and Poland Syndrome



3D custom-made implants



Sebbin
PARIS

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Thoracic Deformities

Thoracic deformities such as Pectus Excavatum and Poland Syndrome have a substantial psychological impact on the patient. Filling deformities in with 3D custom-made implants is a satisfactory personalised solution to this morphological problem ^(1,4).

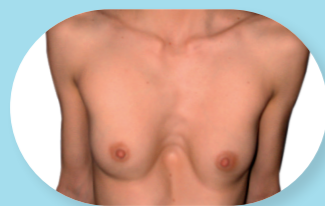
PECTUS EXCAVATUM

Pectus Excavatum or “funnel chest” is the most common congenital thoracic malformation, occurring in 1 in 300 births ⁽³⁾. It is characterised by a median or lateral depression of the sternum ^(1,3). The condition rarely affects cardiac or respiratory function. However, it does often have a major psychological impact.

The Chin classification is most often used to categorise the three types of Pectus Excavatum ^(3,4).

TYPE 1

Deformity is symmetrical, deep and focuses on the sternum.



Pectus Excavatum Type 1 in a Woman

TYPE 2

Deformity is symmetrical, less deep and extends to the pectoral regions.



Pectus Excavatum Type 2 in a Man

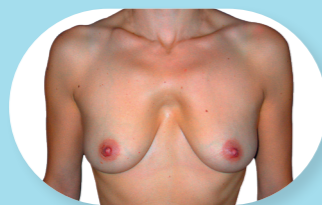
TYPE 3

Deformity is asymmetrical and extends to the pectoral regions.



Pectus Excavatum Type 3 in a Woman

Other types of Pectus Excavatum are not included in this classification: Pectus Arcuatum, Mixed Pectus and revision of secondary cases (after the failure of other procedures such as Nuss or Ravitch).



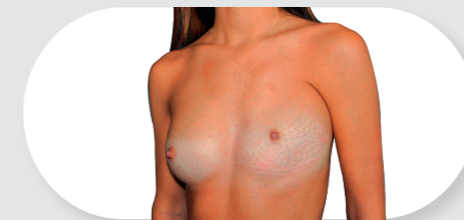
Pectus Arcuatum



Ravitch Revision

POLAND SYNDROME

Poland Syndrome is a relatively rare congenital malformation that affects 1 in 30,000 births ⁽³⁾. It is characterised by the complete or partial absence of the pectoralis major and sometimes associated with a homolateral hand deformity. While clinical forms of Poland Syndrome vary significantly, sternocostal fibre agenesis is always present ⁽⁵⁾.



Poland Syndrome Type 3 in a Woman

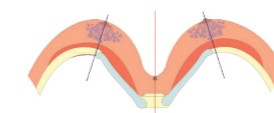


Poland Syndrome Type 3 in a Man

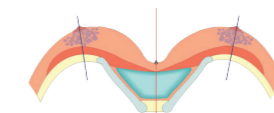
MAMMARY DEFORMITIES

Pectus Excavatum and Poland Syndrome in women often lead to breast deformities: asymmetry, convergence or divergence.

This cannot just be treated with a mammary implant as the thoracic malformation must be corrected first ⁽³⁾.

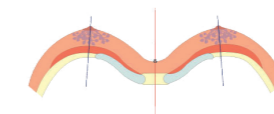


Pectus Type 1 - Strong Convergence

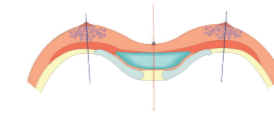


Correction with Custom-Made Implant

Pectus Type 1

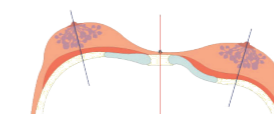


Pectus Type 2 - Slight Convergence

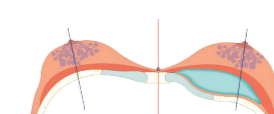


Correction with Custom-Made Implant

Pectus Type 2



Pectus Type 3 - Asymmetry



Correction with Custom-Made Implant

Pectus Type 3

A 100% Personalised Solution

For Treating Pectus Excavatum and Poland Syndrome

To fulfil surgeons' requirements and meet every patient's specific needs, Groupe Sebbin and AnatomikModeling have combined their joint expertise to develop custom-made silicone implants particularly suitable for treating thoracic deformities such as Pectus Excavatum and Poland Syndrome.

The precision of the 3D technology allows the custom-made implants to fit each patient's anatomy, with immediate cosmetic results ^(1,4).

Unlike traditional more invasive techniques such as Nuss and Ravitch, this technique corrects the deformity without affecting the chest cavity ⁽⁴⁾.



IMMEDIATE MORPHOLOGICAL RESULTS

Once the custom-made implants are in place, they cannot be seen. The morphological results are visible at the end of the operation. Clinical results show patient satisfaction levels of 80% ⁽⁴⁾.

PECTUS EXCAVATUM



Pectus Excavatum Type 1 in a Woman

POLAND SYNDROME



Poland Syndrome Type 3 in a Woman



Pectus Excavatum Type 4 in a Man (Arcuatum)



Poland Syndrome Type 3 in a Man

BEFORE/AFTER SURGERY



PRECISE TECHNOLOGY

From the patient's CT scan, a 3D version of the chest highlighting the different anatomical details, including bone, muscle, cartilage and skin.

The implant is then designed virtually, taking into account the anterior anatomical plane and posterior surgical plane of the thorax.

The final implant is a perfect reproduction made of silicone elastomer and manufactured by hand. This means every implant is unique and fits the patient perfectly ⁽⁴⁾.



A SIMPLE AND MINIMALLY INVASIVE SURGICAL TECHNIQUE ^(4,8)

Custom-made implants require just **one operation** lasting approximately an hour. The hospital stay is generally one or two days.

There is a **low risk of complications**.

After the surgery, pain is moderate (treatable with simple painkillers), with **rapid recovery** (15 days off work and 3 months off physical activity).



LIFELONG IMPLANTS

The custom-made implants are made of a medical-grade silicone elastomer. This smooth rubber is indestructible.

There is no risk of retraction or rupture due to their semi-rigid consistency, meaning they do not need to be replaced ^(2,3).



A Simple Process

The custom-made implant design and manufacturing process takes 8 to 12 weeks minimum after the surgeon has approved the design.

8 TO 12 WEEKS



1 CT SCAN

The patient's entire chest is scanned

- Supine with arms along the body
- 1 to 1.2 mm thick DICOM standard-format cuts
- Medical tomography with a CT scan or mediastinal filter to achieve a good contrast

2 PATIENT SCAN AND PRESCRIPTION SENT

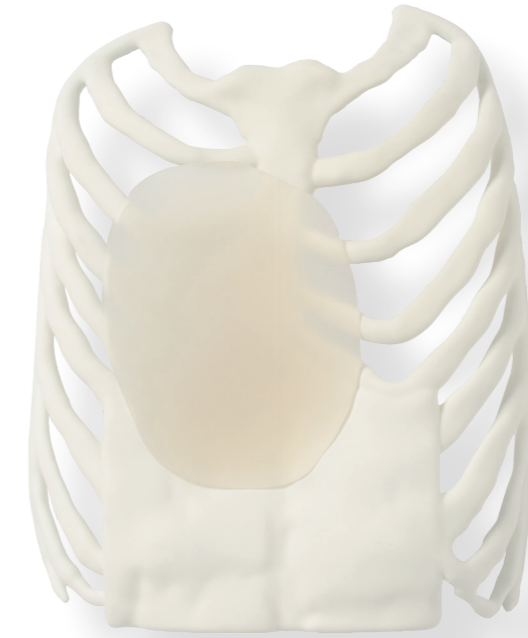
3 QUOTE DRAWN UP

4 QUOTE APPROVED AND ORDER CONFIRMED

5 3D IMPLANT DESIGNED AND APPROVED BY THE SURGEON

6 IMPLANT MANUFACTURED AND STERILISED

7 DELIVERY



Thorax specimen with implant



Implant specimen

Sources

- (1) Chavoïn J.P., *et al.* Correction of Pectus Excavatum by Custom-Made Silicone Implants: Contribution of Computer-Aided Design Reconstruction. A 20-Year Experience and 401 Cases. *Plast Reconstr Surg.* 2016.
- (2) Chavoïn J.P., *et al.* Correcting Poland Syndrome with a Custom-Made Silicone Implant: Contribution of Three-Dimensional Computer-Aided Design Reconstruction. *Plast Reconstr Surg.* 2018.
- (3) Chavoïn, J.P., (Ed.). *Pectus Excavatum and Poland Surgery. Custom-Made Silicone Implants by Computer Aided Design.* Springer. 2019.
- (4) Chavoïn J.P., *et al.* Chirurgie simplifiée du pectus excavatum par implants sur mesure conçus par ordinateur. *EMC Techniques chirurgicales Thorax.* 2020.
- (5) Chavoïn J.P., *et al.* Syndrome de Poland. *EMC - Techniques chirurgicales - Chirurgie plastique, reconstructrice et esthétique* 2016.
- (6) Chavoïn J.P., *et al.* Le Pectus Excavatum : chirurgie secondaire par implants. *Ann Chir Plast Esthét.* 2019.
- (7) Ho Quoc C., *et al.* Correction des asymétries mammaires associées au Pectus Excavatum primaire. *Ann Chir Plast Esthét.* 2013.
- (8) Bostanci T., *et al.* Perioperative anesthetic and surgical complications of the Nuss procedure. *Journal of cardiothoracic and vascular anesthesia* 2013.



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IMPORTANT

This document is intended for health professionals. The custom-made implants are Class IIb devices designed to be used in plastic, reconstructive and cosmetic surgery. Groupe Sebbin only allows its devices to be used by medical professionals trained in plastic, reconstructive and cosmetic surgery.

In accordance with Medical Devices Directive 93/42/EEC, the custom-made implants are manufactured and distributed by Groupe Sebbin. Being custom-made, the product does not have a CE mark. However, it does meet all the requirements of Directive 93/42/EEC and is manufactured in line with our ISO 13485 quality management system.

The cost of custom-made implants may be refunded by health insurance providers with prior agreement.

Please check the arrangements in your country.



Please read the Instructions for use carefully before use. They are available in private access in www.mysebbin.com.

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Professional documentation on 3D custom-made implant (surgical procedures, operation videos, webinars, etc.) is available in the professional area of the website.

www.anatomikmodeling.com

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