

# 3D CUSTOM-MADE IMPLANTS

to treat Pectus Excavatum and Poland syndrome

**Anatomik  
Modeling**

3D custom-made implants

***Implantech***<sup>®</sup>  
Facial and Body Implants

# 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<sup>(1,4)</sup>.

## PECTUS EXCAVATUM

Pectus Excavatum or "funnel chest" is the most common congenital thoracic malformation, occurring in 1 in 300 births<sup>(3)</sup>. It is characterised by a median or lateral depression of the sternum<sup>(1,3)</sup>.

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<sup>(3,4)</sup>.

### 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<sup>(3)</sup>. 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<sup>(5)</sup>.



Poland Syndrome Type 3  
in a Woman

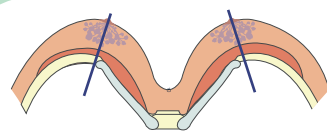


Poland Syndrome Type 3  
in a Man

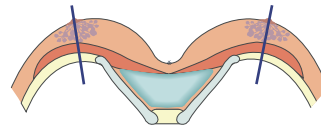
## MAMMARY DEFORMITIES

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<sup>(3)</sup>.

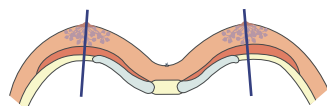


Pectus Type 1 - Strong Convergence

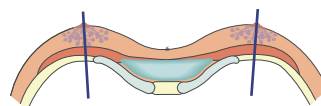


Correction with Custom-Made Implant

### Pectus Type 1

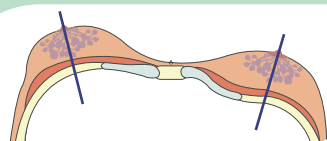


Pectus Type 2 - Slight Convergence

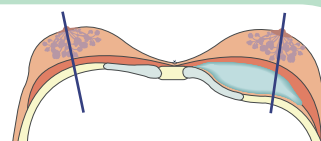


Correction with Custom-Made Implant

### Pectus Type 2



Pectus Type 3 - Asymmetry



Correction with Custom-Made Implant

### Pectus Type 3

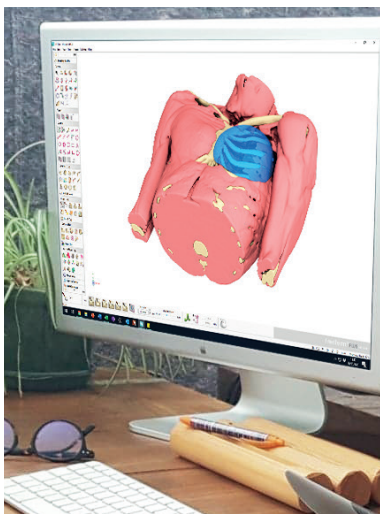
# A 100% Personalised Solution

## For Treating Pectus Excavatum and Poland Syndrome

To fulfil surgeons' requirements and meet every patient's specific needs, AnatomikModeling have developed 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<sup>(1,4)</sup>.

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



### PRECISE TECHNOLOGY

From the patient's CT scan, our engineers are building a virtual copy 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<sup>(4)</sup>.

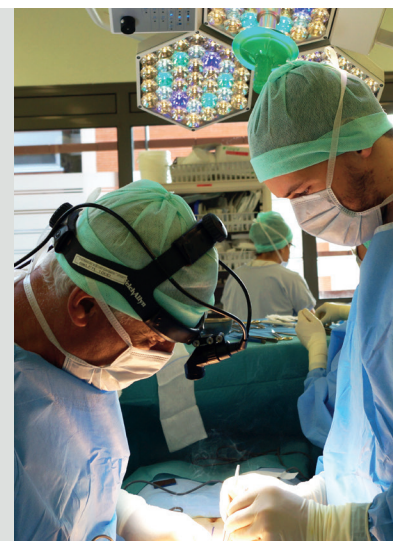


### A SIMPLE AND MINIMALLY INVASIVE SURGICAL TECHNIQUE<sup>(4,8)</sup>

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).





## 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%<sup>(4)</sup>.

### PECTUS EXCAVATUM

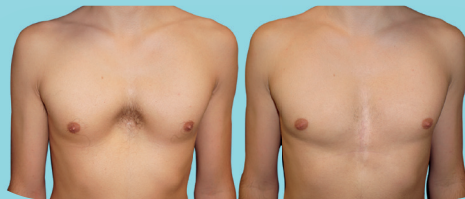


Pectus Excavatum Type 1 in a Woman

### POLAND SYNDROME



Poland Syndrome Type 3 in a Woman

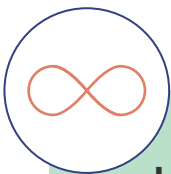


Pectus Excavatum Type 4 in a Man (Arcuatum)



Poland Syndrome Type 3 in a Man

BEFORE/AFTER SURGERY



## 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<sup>(2,3)</sup>.



# A simple process

The custom-made implant design and manufacturing process takes 4 to 6 weeks after the surgeon has approved the design.

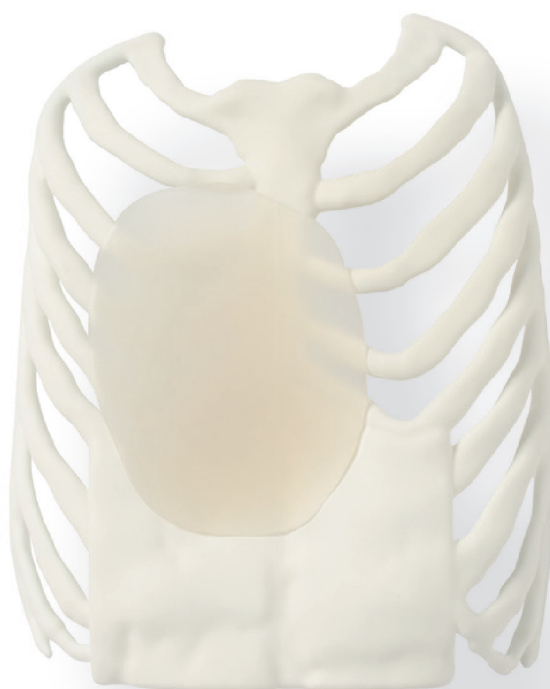
It is recommended to wait for the confirmed delivery date of the implant before setting a firm surgery date. If a specific date is required in the near future, the AnatomikModeling customer service must be notified by email to assess feasibility.







Discover the complete  
ordering process



Thorax specimen with an implant

#### Bibliography:

1. Chavoin 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. Chavoin 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. Chavoin, J.P., (Ed.). *Pectus Excavatum and Poland Surgery. Custom-Made Silicone Implants by Computer Aided Design*. Springer. 2019.
4. Chavoin J.P., et al. Correcting of Calf Atrophy With a Custom-Made Silicone Implant: Contribution of Three-Dimensional Computer-Aided Design Reconstruction: A Pilot Study. *Aesthetic Surgery Journal*, Volume 41, Issue 2, February 2021
5. Jean-Pierre Chavoin, Flavio Facchini, Akshay J. Patel, Ian Hunt, The Role of Computer-Aided Design Implant Insertion in Revision Pectus Surgery, *The Annals of Thoracic Surgery*, Volume 112, Issue 5, 2021, Pages e387-e390



#### IMPORTANT

This product was designed for use by licensed physicians with proper training and experience. Proper surgical procedures and techniques are the responsibility of the medical professional. Each surgeon must evaluate the suitability of the procedure based upon current accepted techniques, a thorough evaluation of the patient, individual judgment, and experience.

In accordance with Medical Devices Directive 2005/745/EEC, the custom-made implants (3D Accuscan Patient-Specific®) are manufactured by Implantech and designed and distributed by AnatomikModeling. Being custom-made, the product does not have a CE mark. However, it meets all GSPR safety and performance requirements.



Professional documentation on 3D custom-made implant (surgical procedures, surgical videos, webinars, etc.) is available in the professional area of the website: [www.anatomikmodeling.com/en/user/register](http://www.anatomikmodeling.com/en/user/register)

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