PHACON

3D LIFE MODELING & SIMULATION

Product catalogue

2016

Introduction

PHACON
3D LIFE MODELING & SIMULATION

The concept: Real trained – virtual assisted

The PHACON system unites the advantages of a surgical training on an anatomical model with the possibilities of virtual assistance. The surgery on the artificial specimen is supported by a related navigation system and integrated sensor technology.

Strategies of operating can be trained with real instruments with the necessary haptic, as usual with specimen. Additionally, the surgeon receives further information, e.g. CT-data, the virtual model, the position of the instrument and the analysis of injured risk structures.

The artificial specimen can be used any time, in any place and without any effort. Worldwide PHACON systems and artificial specimen are in use as an effective supplement or alternative to human specimen. In surgical training courses, on fairs and congresses, the systems are immediately ready for use without special handling or storing. That is what makes them a popular and uncomplicated training unit for hands-on courses and an effective marketing tool (e.g. for manufacturers of medical devices or hearing aids and implants). The assistance and support during the surgical education by the help of simulators is a rising and increasingly trend to train and transfer knowledge of new and complex strategies of surgery. In this respect, PHACON is very active especially in the field of ENT as well as neurosurgery. In the future, PHACON will also develop additional simulators for other disciplines.

Furthermore PHACON developed a special method which significantly facilitates your OR preparation. Based on medical image data (CT, MR, DVT, 3D-ultrasound) we produce patient individual 3D models. Surgeons as well as patients receive additional information by this way of preoperative planning of complex intervention.

Table of Contents

PHACON Temporal Bone System
PHACON Sinus System
PHACON Throat System

PHACON TEMPORAL BONE SYSTEM

The PHACON Temporal Bone System can facilitate the organisation of your training course with the following advantages:

- The system allows training independent from location, because no complex handling, storing or special rooms are necessary for the artificial specimen
- Expenditure of time is reduced for you as instructor by autonomous training of your residents by the help of standardised anatomies and virtual assistance
- Automatic analysis and learning curves help to evaluate the training objective
- Artificial specimen (PHACON Temporal Bone Patients) are always available and can be ordered at PHACON any time
- PHACON Temporal Bone Patient as evidence for the passed training session
- The included CT-data set enables the authentic navigation within the related model
- Economic consumption costs
- Nonhazardous residues to easily wipe away

SYSTEM VARIANTS

The PHACON Temporal Bone System is a surgical simulation system that combines a physical model with virtual feedback. Unlike other simulators that rely on a video game style simulation to simulate surgery, the PHACON system allows the surgeon to simulate surgery on an artificial specimen (PHACON Temporal Bone Patient) using the same instrumentation that is used in surgery.

PHACON provides a variety of system options. From the fully equipped system, including navigation software and full functionality in virtual assistance until the slim version, consisting of a stable Holder Tray for a save fixation of the Temporal Bone Patient.

The system is conceptualised for the training of:

- Mastoidectomy
- Cochleostomy
- Insertion of an electrode into the Scala tympani
- Preparing implant beds for bone bridge implants
- Placing middle ear implant systems, e.g. to the ossicles
- Tympanoskopy

ENT Temporal Bone System

Fully equipped with navigation

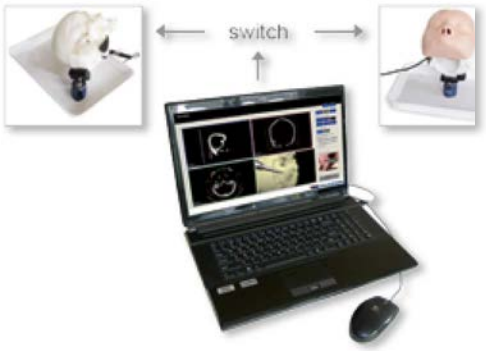
Properties:

The PHACON Temporal Bone System with navigation software and all components included for full functionality during your training session.

- 1 base system with electronic
- 1 holder with tray
- 1 laptop with navigation software
- 1 instrument tracker set
- 1 tracking camera
- 1 transport case

Art. no.: S-18

Extension set
- to full equipped system with navigation



Art. no.: E

Properties:

The PHACON Extension set is connectable to the PHACON Temporal Bone System „Extendible“ or the PHACON Sinus System „Extendible“. It enables the navigation and all functionalities of the software during the simulation.

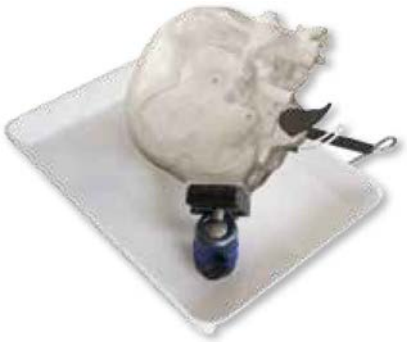
- 1 laptop with navigation software
- 1 instrument tracker set
- 1 tracking camera

Extendible

Properties:

Connect the Temporal Bone System „Extendible“ with the PHACON Extension set for a full functional system with navigation

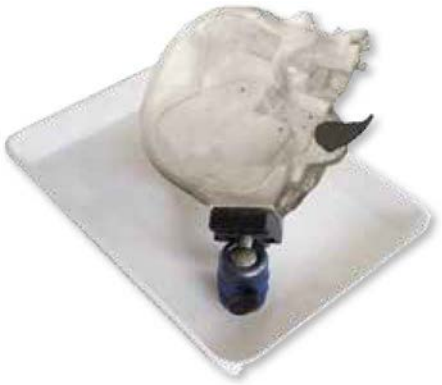
- 1 base system with electronic
- 1 holder with tray
- 1 transport case



Art. no.: S-19

Use the PHACON Temporal Bone Patients with electrical detection.

Basic



Art. no.: S-20

Properties:

The Temporal Bone System „Basic“ offers a stable holder with an adjustable skull for a convenient training session on the PHACON Temporal Bone Patient.

- 1 base system
- 1 holder with tray
- 1 transport case

Holder Tray

Properties:

The Temporal Bone Holder Tray can be applied for all types of PHACON Temporal Bone Patients.
Rotate and adjust your Temporal Bone Patient with the twistable joint head.

- 1 holder with tray
- 1 joint head
- 1 laptop bag

Art. no.: S-30

Transport Case

solid case skin

useful pull-out handle

Arti. No.: S-32

Properties:

Use the PHACON Transport Case for safe and easy transport of all system components. Suitable for the PHACON Temporal Bone System and Sinus System.

- 1 transport case
  The transport case is intended for the use as hand baggage!

Use the PHACON Temporal Bone Patients without electrical detection.

PATIENTS

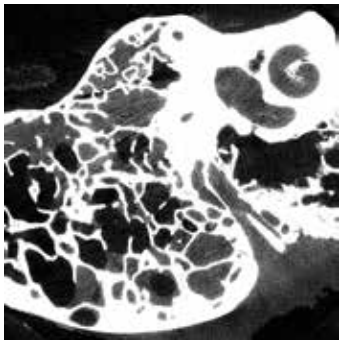
The PHACON Temporal Bone Patients are artificial specimen to practice different surgeries on the temporal bone, even a cochleostomy. They are removed after the training session and can be replaced afterwards by a new model.
This concept achieves a cost-saving course organisation, because only the Temporal Bone Patient will be exchanged from the system. To automatically detect injuries of risk structures, the models consist of electronics (electrical detection).
The PHACON Temporal Bone Patients can be reordered at PHACON any time.

PATIENT „SCHMIDT“

To train different classic surgeries on the temporal bone, for example mastoidectomy, the PHACON Temporal Bone Patient „Schmidt“ represents an anatomic highly detailed variant of an artificial specimen. Structures like the tympanic membrane, the ossicles, the facial nerve and Chorda tympani are integrated as important landmarks. In the special variants for practicing cochleostomy, a complex cochlea for inserting electrodes into the Scala tympani is implemented. Preparing an implant bed for e.g. bone bridge implants is also possible.

Properties:

- Applicable for the training of surgeries like mastoidectomy or cochleostomy
- Applicable for the training of placing middle ear implant systems, e.g. to the ossicles
- Irrigable, bone-similar material for realistic drilling properties
- Pneumatised bone
- Representation of soft tissue (dura)
- Cochlear and Ductus semicirculares
- Muscles and nerves: Nervus facialis, Chorda tympani, N. Petrosus major, Musculus stapedius, Musculus tensor tympani
- Vessels: Sinus sigmoideus, Arteria carotis
- Tympanic membrane and ossicles
- Round window membrane



The PHACON Temporal Bone Patient „Schmidt“ is basing on a high resolution CT data set, which is included in the navigation system.

Electrical detection enables the detection of injuries of risk structures within the connected PHACON navigation system. If injured, an optic and acoustic signal appears in the navigation software.

Detectable structures of the patient “Schmidt“ are:

- Nervus facialis, Sinus sigmoideus, Ductus semicircularis, Chorda tympani, Dura

„Schmidt“

Properties:

- for e.g. mastoidectomy
- placing bone conduction implants
- flexible dura and nerves

Art. no. right side: TFbc

Art. no. left side: TFbo

„Schmidt“

Art. no. left side: TFbp

Art. no. right side: TFbg

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants with detectable risk structures

„Schmidt“
pre-drilled

Art. no. left side: TFbw

Art. no. right side: TFbv

Properties:

- facial recess and round window access
- flexible dura and nerve
- placing bone conduction implants
- for electrode insertion into Scala tympani

„Schmidt“
for cochlea implantation

Art. no. right side: TFba

Art. no. left side: TFbm

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy, placing bone conduction implants
- electrode insertion into the Scala tympani

„Schmidt“
for cochlea implantation

Art. no. left side: TFbn

Art. no. right side: TFbf

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants
- for electrode insertion into Scala tympani
- with detectable risk structures

cochlea implantation with flexible ossicles for placing middle ear implants

„Schmidt“
for middle ear implants

Properties:

- flexible ossicles
- flexible dura and nerves
- for e.g. placing middle ear implants
- mastoidectomy
- placing bone conduction implants
- electrode insertion into the Scala tympani

Art. no. right side: TFbq

Art. no. left side: TFbs

„Schmidt“
for middle ear implants

Art. no. right side: TFbr

Art. no. left side: TFbt

Properties:

- flexible dura and nerves
- for e.g. placing middle ear implants
- mastoidectomy
- placing bone conduction implants
- electrode insertion into the Scala tympani

with detecable risk structures

„Schmidt“
with skin

Properties:

- with artificial periosteum and scalp
- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants

Art. no. right side: TFbx

Art. no. left side: TFbz

cochlea implantation with flexible ossicles for placing middle ear implants

„Schmidt“
with skin

Art. no. left side: TFbaa

Art. no. right side: TFby

Properties:

- with artificial periosteum and scalp
- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants
- with flexible ossicles for placing middle ear implants
- electrode insertion into the Scala tympani

„Schmidt“
with round window membrane

Art. no. right side: TFbae

Art. no.left side: TFbad

Properties:

- with round window membrane
- flexible dura and nerves
- for e.g. placing middle ear implants
- mastoidectomy
- placing bone conduction implants
- electrode insertion into the Scala tympani

„Schmidt“
with skin in the auditory canal and round window membrane

Art. no. left side: TFbac

Art. no. right side: TFbab

Properties:

- with skin in the auditory canal (tympanomeatal flap)
- with round window membrane
- flexible ossicles
- flexible dura and nerves
- for e.g. placing middle ear implants
- mastoidectomy
- placing bone conduction implants
- electrode insertion into the Scala tympani

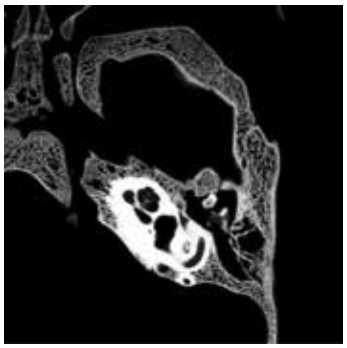
cochlea implantation with flexible ossicles for placing middle ear implants

PATIENT „WAGNER“

The PHACON Temporal Bone Patient „Wagner“ is based on a high resolution CT-scan of a 27 months old child. It offers the exceptional possibility to perform a cochleostomy on an artificial pediatric temporal bone. Surgeries like mastoidectomy or the preparation of an implant bed can be trained with the different variants of the Temporal Bone Patient „Wagner“. Tympanic membrane and ossicles, as well as the important landmarks Nervus facialis or Sinus sigmoideus are included. As all PHACON Temporal Bone Patients, the pediatric temporal bone „Wagner“ can be inserted into the PHACON Temporal Bone System.

Properties:

- Applicable for the training of surgeries like mastoidectomy
- Irrigable, bone-similar material for realistic drilling properties
- Pneumatised bone
- Representation of soft tissue (dura)
- Cochlea with Scala tympani and Ductus semicircularis for the training of cochleostomy
- Muscles and nerves: Nervus facialis, Chorda tympani, N. Petrosus major, Musculus stapedius
- Vessels: Sinus sigmoideus, Arteria carotis, Vena jugularis
- Tympanic membrane and ossicles



The PHACON Temporal Bone Patient „Wagner“ is basing on a micro CT scan of a 27 month old child, which is included in the navigation system.

Electrical detection enables the detection of injuries of risk structures within the connected PHACON navigation system. If injured, an optic and acoustic signal appears in the navigation software.

Detectable structures of the patient “Wagner“ are:

- Nervus facialis, Sinus sigmoideus, Chorda tympani, Dura

„Wagner“

Art. no. left side: TFda

Art. no. right side: TFde

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants

„Wagner“

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants
- with detectable risk structures

Art. no. right side: TFdf

Art. no. left side: TFdb

„Wagner“
for cochlea implantation

Art. no. left side: TFdc

Art. no. right side: TFdg

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants
- electrode insertion into the Scala tympani

cochlea implantation with flexible ossicles for placing middle ear implants

„Wagner“
for cochlea implantation

Art. no. right side: TFdh

Art. no. left side: TFdd

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants
- electrode insertion into the Scala tympani

with detectable risk structures

Properties:

- with round window membrane
- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants
- placing middle ear implants
- electrode insertion into the Scala tympani

„Wagner“
with round window membrane

Art. no. right side: TFdn

Art. no. left side: TFdm

cochlea implantation with flexible ossicles for placing middle ear implants

„Wagner“
for middle ear implants

Art. no. right side: TFdl

Art. no. left side: TFdj

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants
- placing middle ear implants
- electrode insertion into the Scala tympani

with detectable risk structures

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants
- placing middle ear implants
- electrode insertion into the Scala tympani

Art. no. right side: TFdk

„Wagner“
for middle ear implants

Art. no. left side: TFdi

cochlea implantation

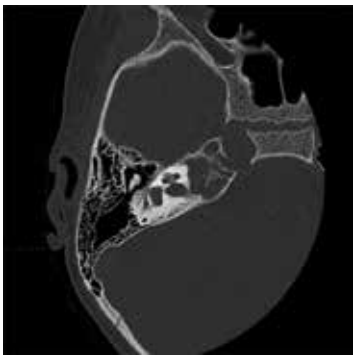
with flexible ossicles for placing middle ear implants

PATIENT „SCHNEIDER“

The PHACON Temporal Bone Patient „Schneider“ is based on a high resolution CT-scan of a 6 year old child. Surgeries like mastoidectomy or the preparation for an implant bed can be trained. Ossicles, as well as the important landmarks Nervus facialis or Sinus sigmoideus are included. As all PHACON Temporal Bone Patients, the pediatric temporal bone „Schneider“ can be inserted into the PHACON Temporal Bone System.

Properties:

- Applicable for the training of surgeries like mastoidectomy
- Irrigable, bone-similar material for realistic drilling properties
- Pneumatised bone
- Representation of soft tissue (dura)
- Nerves: Nervus facialis, Chorda tympani
- Vessels: Sinus sigmoideus, Vena jugularis
- Ossicles



The PHACON Temporal Bone Patient „Schneider“ is basing on a high resolution CT scan of a 6 year old child, which is included in the navigation system.

Electrical detection enables the detection of injuries of risk structures within the connected PHACON navigation system. If injured, an optic and acoustic signal appears in the navigation software.

Detectable structures of the patient “Schneider“ are:

- Nervus facialis, Sinus sigmoideus, Chorda tympani, Dura

„Schneider“

Properties:

- flexible dura
- for e.g. mastoidectomy
- placing bone conduction implants

Art. no. right side: TFea

„Schneider“
for middle ear implants

Art. no. right side: TFeb

Art. no. left side: Tfec

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants
- with flexible ossicles for placing middle ear implants
- electrode insertion into the Scala tympani

Properties:

- flexible dura and nerves
- for e.g. mastoidectomy
- placing bone conduction implants
- with flexible ossicles for placing middle ear implants
- electrode insertion into the Scala tympani

with detectable risk structures

Art. no. right side: TFed

„Schneider“
for middle ear implants

Art. no. left side: TFeg

cochlea implantation with flexible ossicles for placing middle ear implants

PATIENT „WINKLER“

The PHACON Temporal Bone Patient „Winkler“ is based on a CT-dataset of a 4 year old child with atresia. In this special case, the temporal bone shows an occlusion of the external auditory canal and merged ossicles. Again, this CT-dataset can be installed into the PHACON navigation system which enables the navigation within the CT-images of patient „Winkler“ during the training in real-time.

Properties:

- Applicable for the training of surgeries like mastoidectomy
- Irrigable, bone-similar material for realistic drilling properties
- Pneumatised bone
- Representation of soft tissue (dura)
- Nerves: flexible Nervus facialis (soft material)
- Vessels: flexible Sinus sigmoideus (soft material)
- Flexible ossicles

The PHACON Temporal Bone Patient „Winkler“ is basing on a high resolution CT scan of a 4 year old child, which is included in the navigation system.

Electrical detection enables the detection of injuries of risk structures within the connected PHACON navigation system. If injured, an optic and acoustic signal appears in the navigation software.

Detectable structures of the patient “Winkler“ are:

- Nervus facialis, Sinus sigmoideus, Dura

„Winkler“
for middle ear implants

Art. no. right side: TFgc

Art. no. left side: TFgd

Properties:

- with atresia
- for e.g. mastoidectomy
- with flexible ossicles for placing middle ear implants
- electrode insertion into the Scala tympani

Properties:

- with atresia
- for e.g. mastoidectomy,
- with flexible ossicles for placing middle ear implants
- electrode insertion into the Scala tympani
- with detectable risk structures

Art. no. right side: TFge

„Winkler“
for middle ear implants

Art. no. left side: TFgf

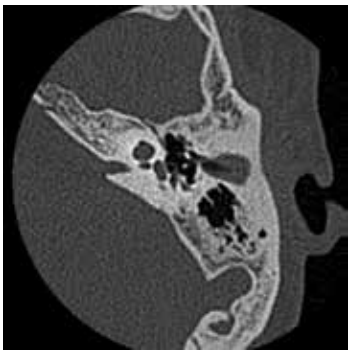
cochlea implantation with flexible ossicles for placing middle ear implants

PATIENT „KOHL“

The PHACON Temporal Bone Patient „Kohl“ is based on a CT-dataset of an 18 year old patient. In this special case, the temporal bone shows a cochlea malformation with a hypoplasia of the cochlear and the vestibular system. Again, this CT-dataset can be installed into the PHACON navigation system which enables the navigation within the CT-images of patient „Kohl“ during the training in real-time.

Properties:

- Applicable for the training of surgeries like mastoidectomy
- Irrigable, bone-similar material for realistic drilling properties
- Pneumatised bone
- Facial nerve
- Flexible sinus sigmoideus
- Flexible dura
- Ossicles
- Hyperplasia of the cochlear and the vestibular system



The PHACON Temporal Bone Patient „Kohl“ is basing on a high resolution CT scan of an 18 year old patient, which is included in the navigation system.

Electrical detection enables the detection of injuries of risk structures within the connected PHACON navigation system. If injured, an optic and acoustic signal appears in the navigation software.

Detectable structures of the patient “Kohl“ are:

- Nervus facialis, Sinus sigmoideus, Chorda tympani, Dura

„Kohl“
for middle ear implants

Art. no. right side: TFic

Art. no. left side: TFid

Properties:

- hyperplasia of the cochlea and vestibular system
- for e.g. mastoidectomy
- with flexible ossicles for placing-middle ear implants
- electrode insertion into the Scala tympani

Properties:

- hyperplasia of the cochlea and vestibular system
- for mastoidectomy
- with flexible ossicles for placing middle ear implants
- electrode insertion into the Scala tympani
- with detectable risk structures

„Kohl“
for middle ear implants

Art. no. right side: TFie

Art. no. left side: TFif

cochlea implantation

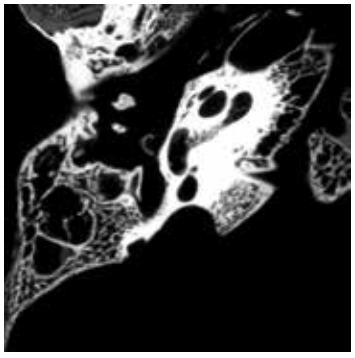
with flexible ossicles for placing middle ear implants

PATIENT „KLEIN“

The PHACON Temporal Bone Patient „Klein“ is based on a CT-dataset of a 1 year old child. Surgeries like mastoidectomy or the preparation for an implant bed can be trained. Ossicles, as well as the important landmarks Nervus facialis or Sinus sigmoideus are included. As all PHACON Temporal Bone Patients, the pediatric temporal bone „Klein“ can be inserted into the PHACON Temporal Bone System.

Properties:

- Applicable for the training of surgeries like mastoidectomy
- Irrigable, bone-similar material for realistic drilling properties
- Pneumatised bone
- Representation of soft tissue (dura)
- Nerves: flexible Nervus facialis (soft material)
- Vessels: flexible Sinus sigmoideus (soft material)
- Flexible ossicles



The PHACON Temporal Bone Patient „ Klein“ is based on a high resolution CT scan of a one year old child, which is included in the navigation system.

Electrical detection enables the detection of injuries of risk structures within the connected PHACON navigation system. If injured, an optic and acoustic signal appears in the navigation software.

Detectable structures of the patient “Klein“ are:

- Nervus facialis, Sinus sigmoideus, Chorda tympani, Dura

„Klein“
for middle ear implants

Art. no. right side: TFkc

Art. no. left side: TFka

Properties:

- for e.g. mastoidectomy
- flexible dura
- flexiable facial nerve
- with flexible ossicles for placing-middle ear implants
- electrode insertion into the Scala tympani

„Klein“
for middle ear implants

Properties:

- for mastoidectomy
- flexible dura
- flexiable facial nerve
- with flexible ossicles for placing middle ear implants
- electrode insertion into the Scala tympani
- with detectable risk structures

Art. no. right side: TFkd

Art. no. left side: TFkb

cochlea implantation with flexible ossicles for placing middle ear implants

Overview/Properties Temporal Bone Patients

Art. No. right side	Art. No. left side				comments	
Patient „Schmidt“					55 years, regular anatomie	
TFbc	TFbo					
TFbg	TFbp			×		
TFbv	TFbw		×		predrilled	
TFba	TFbm		×			
TFbf	TFbn		×	×		
TFbq	TFbs	×	×			
TFbr	TFbt	×	×	×		
TFbx	TFbz				with skin and outer ear	
TFby	TFbaa	×	×		with skin and outer ear	
TFbae	TFbad	×	×		round window membrane	
TFbab	TFbac	×	×		skin in the auditory canal/ round window membrane	
Patient „Klein“					12 months, regular anatomie	
TFkc	TFka	×	×			
TFkd	TFkb	×	×	×		

 cochlea implantation  with flexible ossicles for placing middle ear implants

 Electrical detection enables the detection of injuries of risk structures within the connected PHACON navigation system.

Overview/Properties Temporal Bone Patients

Art. No. right side	Art. No. left side				comments	
Patient „Wagner“					27 month, regular anatomie	
TFde	TFda					
TFdf	TFdb			×		
TFdg	TFdc		×			
TFdh	TFdd		×	×		
TFdn	TFdm	×	×		round window membrane	
TFdl	TFdj	×	×	×		
TFdk	TFdi	×	×			
Patient „Schneider“					6 year, regular anatomie	
TFea						
TFeb	TFec	×	×			
TFed	TFee	×	×	×		
Patient „Winkler“					4 years , atresia	
TFgc	TFgd	×	×			
TFge	TFgf	×	×	×		
Patient „Kohl“					18 years, hypoplasia of cochlea and the vestibular system	
TFic	TFid	×	×			
TFie	TFif	×	×	×		

 cochlea implantation  with flexible ossicles for placing middle ear implants

 Electrical detection enables the detection of injuries of risk structures within the connected PHACON navigation system.

Sinus Systems

The PHACON Sinus System can facilitate the organisation of your training course with the following advantages:

- The system allows training independent from location, because no complex handling, storing or special rooms are necessary for the artificial specimen
- Expenditure of time is reduced for you as instructor by autonomous training of your residents by the help of standardised anatomies and virtual assistance
- Automatic analysis and learning curves help to evaluate the training objective
- Artificial specimen (PHACON Sinus Patients) are always available and can simply be ordered at PHACON
- Sinus Patient by PHACON as evidence for the passed training session
- The included CT-data set enables the authentic navigation within the related model
- Economic consumption costs
- Nonhazardous residues to easily wipe away

SYSTEM VARIANTS

The PHACON Sinus System offers opportunities in training of sinus and skull base surgery. The haptic feel of a surgery with instruments can be learned on true-to-life artificial specimen (PHACON Sinus Patient) and at the same time, orientation within the related patient CT-data in the navigation software can be practiced. Injuries of structures of risk in the PHACON Sinus Patient during the training session are detected automatically by the help of the connected software.

PHACON provides a variety of system options. Up from the fully equipped system, including navigation software and full functionality in virtual assistance until the slim version, consisting of a stable PHACON Holder Tray for a save fixation of the Sinus Patient.

The system is conceptualised for the training of:

- Functional Endoscopic Sinus Surgery (FESS)
- Usage of navigation
- Transnasal and transethmoidal access to the pituitary gland
- Orbital decompression
- Decompression of the optic nerve

Fully equipped with navigation

Properties:

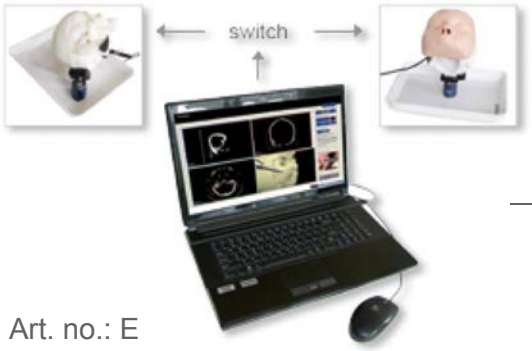
The PHACON Sinus System with navigation software and all components included for full functionality during your training session.

- 1 base system with electronic
- 1 mask
- 1 holder with tray
- 1 laptop with navigation software
- 1 instrument tracker set
- 1 tracking camera
- 1 transport case

Art. no.: S-01

Extension set

- to full equipped system with navigation



Art. no.: E

Properties:

The PHACON Extension set is connectable with the PHACON Sinus System „Extendible“ or the PHACON Temporal Bone System „Extendible“. It enables the navigation and all functionalities of the software during the simulation.

- 1 laptop with navigation software
- 1 instrument tracker set
- 1 tracking camera

Extendible

Properties:

Connect the Sinus System „Extendible“ with the PHACON Extension set for a full functional system with navigation

- 1 base system with electronic
- 1 holder with tray
- 1 transport case

Art. no.: S-02

Use the PHACON Sinus Patients with electrical detection.

Basic

Properties:

The Sinus System „Basic“ offers a stable holder with an adjustable skull for a convenient training session on the PHACON Sinus Patient.

- 1 base system
- 1 mask
- 1 holder with tray
- 1 transport case

Art. no.: S-03

Holder Tray

Art. no.: S-31

Properties:

The Sinus Holder Tray can be applied for all types of PHACON Sinus Patients. Rotate and adjust your Sinus Patient with the twistable joint head.

- 1 holder with tray
- 1 joint head
- 1 laptop bag

Transport Case

Properties:

Use the PHACON Transport Case for safe and easy transport of all system components. Suitable for the PHACON Sinus System and Temporal Bone System.

- 1 transport case

The transport case is intended for the use as hand baggage!

useful pull-out handle

solid case skin

Art. no.: S-32

Use the PHACON Sinus Patients without electrical detection.

PATIENTS

The PHACON Sinus Patients are artificial specimen to practice different surgeries. They can be removed after the training session and easily replaced by a new model.
This concept achieves a cost-saving course organisation, because only the Sinus Patient may be exchanged from the system.
To automatically detect injuries of risk structures, the models consist of electronics (electrical detection). The PHACON Sinus Patients can be reordered at PHACON any time.

PATIENT „MEYER“

The heart of the PHACON Sinus System is the artificial specimen Sinus Patient „Meyer“.
It is based on a CT-data set and offers a realistic surgery simulation as it consists of highly detailed anatomical structures and landmarks, e.g. Processus uncinatus or the Bulla ethmoidalis.
The simulation can be enhanced by the automatic detection of injuries on the model in the related navigation system.
The PHACON Sinus System offers a combination of an artificial specimen (PHACON Sinus Patient) and virtual assistance (PHACON Sinus System) with the original patient CT-data.

Properties:

- Bone similar material for realistic haptic
- Detailed ethmoid cells and frontal sinus
- Imitation of soft tissue (mucosa)
- Flexible turbinates
- Nervus opticus
- Pituitary gland
- Vessels e.g. Arteria carotis, A. sphenopalatina
- Important landmarks e.g. Processus uncinatus, Bulla ethmoidalis and others

The PHACON Sinu Patient „Meyer“
is basing on a high resolution CT data set, which
is included in the navigation system.

Electrical detection enables the detection of injuries of risk structures within the connected PHACON navigation system. If injured, an optic and acoustic signal appears in the navigation software.

Detectable structures of the patient “Meyer“ are:

- Nervus opticus, Carotis interna, Scull base, Lamina papyracea, pituitary gland

„Meyer“

Art. no.: SNab

Properties:

- with simulation of soft tissue
- Functional Endoscopic Sinus Surgery (FESS)
- transnasal and transethmoidal access to the pituitary gland
- orbital decompression
- decompression of the optic nerve

„Meyer“

Art. no.: SNaa

Properties:

- with simulation of soft tissue
- Functional Endoscopic Sinus Surgery (FESS)
- transnasal and transethmoidal access to the pituitary gland
- orbital decompression
- decompression of the optic nerve
- with detectable structures of risk

„Meyer“ with polyps

Art. no.: SNae

Properties:

- with artificial polyps and simulation of soft tissue
- Functional Endoscopic Sinus Surgery (FESS)
- transnasal and transethmoidal access to the pituitary gland
- orbital decompression
- decompression of the optic nerve

Properties:

- with artificial polyps and simulation of soft tissue
- Functional Endoscopic Sinus Surgery (FESS)
- transnasal and transethmoidal access to the pituitary gland
- orbital decompression
- decompression of the optic nerve
- with detectable structures of risk

„Meyer“
with polyps

Art. no.: SNaf

„Meyer“
with polyps

backside view

„Meyer“
for septoplasty

Art. no.: SNma

Properties:

- for septoplasty and rhinoplasty training
- with simulation of soft tissue
- realistic rebuilt of cartilage from soft material
- Functional Endoscopic Sinus Surgery (FESS)
- transnasal and transethmoidal access to the pituitary gland
- decompression of the optic nerve

PATIENT „SCHULZE“

The PHACON Sinus Patient „Schulze is based on a CT-data and offers a realistic surgery simulation as it consists of highly detailed anatomical structures and landmarks, e.g. Processus uncinatus or the Bulla ethmoidalis. As a special anatomical property this patient has a low-lying scull base.
The simulation can be enhanced by the automatic detection of injuries on the model in the related navigation system.
The PHACON Sinus System offers a combination of an artificial specimen (PHACON Sinus Patient) and virtual assistance (PHACON Sinus System) with the original patient CT-data.

Properties:

- Bone similar material for realistic haptic
- Low lying scull base
- Detailed ethmoid cells and frontal sinus
- Imitation of soft tissue (mucosa)
- Flexible turbinates
- Nervus opticus
- Pituitary gland
- Vessels (e.g. Arteria carotis, A. sphenopalatina)
- Important landmarks e.g. Processus uncinatus, Bulla ethmoidalis and others

The PHACON Sinus Patient „Schulze“
is basing on a high resolution CT data set,
which is included in the navigation System

Electrical detection enables the detection of injuries of risk structures within the connected PHACON navigation system. If injured, an optic and acoustic signal appears in the navigation software.

Detectable structures of the patient “Schulze“ are:

- Nervus opticus, Carotis interna, Scull base, Lamina papyracea, pituitary gland

„Schulze“

Properties:

- low-lying scullbase
- with simulation of soft tissue
- realistic rebuilt of cartilage from soft material
- Functional Endoscopic Sinus Surgery (FESS)
- trans nasal and transethmoidal access to the pituitary gland
- decompression of the optic nerve

Art. no.: SNbb

„Schulze“

Art. no.: SNba

Properties:

- low-lying scullbase
- with simulation of soft tissue
- realistic rebuilt of cartilage from soft material
- Functional Endoscopic Sinus Surgery (FESS)
- transnasal and transethmoidal access to the pituitary gland
- decompression of the optic nerve
- with detectable structures of risk

PHACON THROAT SYSTEM

The PHACON Throat System allows the training of the following procedures:

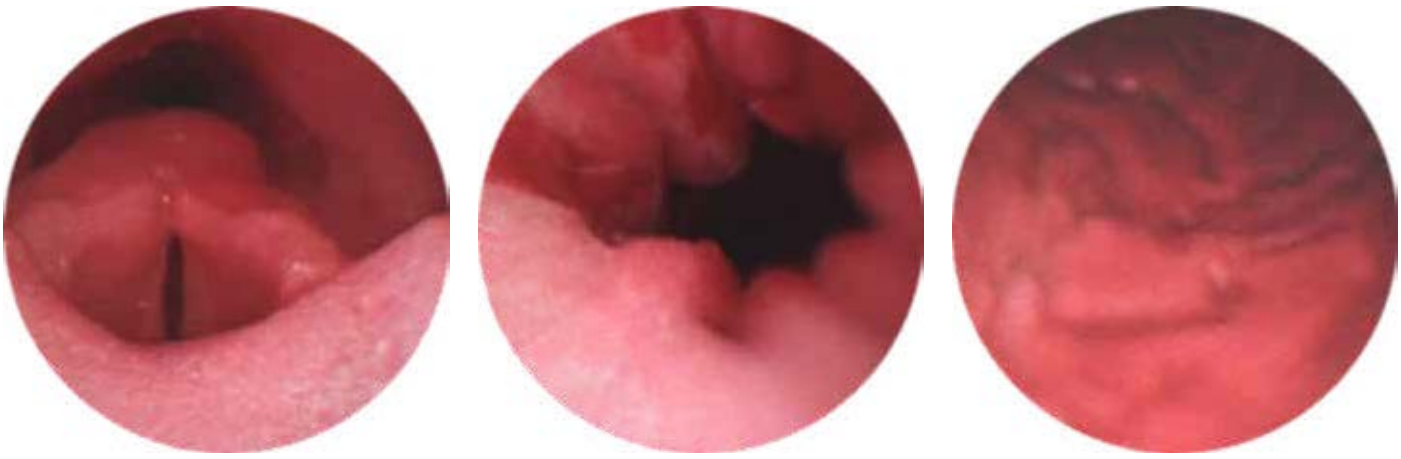
- Functional Endoscopic Sinus Surgery (FESS)
- Transnasal endoscopy
- Simulating swallowing movement
- Inverting the endoscope

SYSTEM PROPERTIES

PHACON offers a specific training system for endoscopic interventions. A human based artificial skull is used as a base model which can be equipped with the exchangeable PHACON Throat Patient. The endoscope is inserted over the nasal cavity past the larynx into the stomach whereat no human soft parts shall be injured.

Via flexible structures in the model, bodily functions like the swallowing movement can be simulated. The compact parts of the training system like skull and the bony structure of the nose are constructed using a bone similar material, developed by PHACON. Soft parts like the epiglottis and the esophagus consist of a special soft synthetic material. The model is realistically based on the human original in terms of optics and haptics.

All PHACON systems are designed to enable an efficient course arrangement. That means: The PHACON Throat Patient is clicked in the system and can be exchanged easily after usage by a new model. This principle of exchangeable Throat Patients facilitates a marked decrease of expenses.



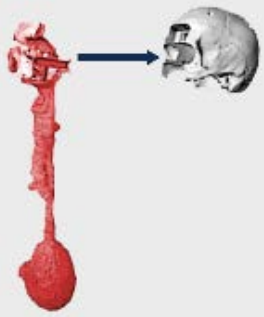
Endoscopic view into the Throat Patient

PHACON Throat System

Art. no.: S-10

Properties:

- 1 mask
- 1 skull
- 1 Throat Patient „Peters PMaa“
- 1 tripod



PATIENTS

PHACON Throat Patients represent an anatomical detailed replication of the human throat, esophagus and stomach, connected to the PHACON Sinus Patient „Meyer“. Based on a MRI data set of a real patient, the model is elaborated in full detail and with true-to-life soft material to imitate the natural properties of the larynx, esophagus and stomach. Important structures like epiglottis, vocal chords and cardia are included. Additional, PHACON offers a Throat Patient with a tumor in the area of the larynx as a special patient situation.

Endoscopic view into the Throat Patient „Peters“ with tumor

PATIENT „PETERS“

Via flexible structures in the model, bodily functions like the swallowing movement can be simulated. The compact parts of the training system like skull and the bony structure of the nose are built of a bone similar material, developed by PHACON. The model is realistically based on the human original in terms of optics and haptics.

Properties:

- Bone similar material for realistic haptic
- Soft material for true-to-life larynx, esophagus and stomach
- Detailed epiglottis
- Vocal chords
- Cardia

„Peters“

Properties:

- PHACON Sinus Patient “Meyer“
- bone similar material for realistic haptic
- soft material for true-to-life larynx, esophagus and stomach
- detailed epiglottis and vocal chords
- cardia

Art. no.: PMaa

„Peters“ with tumor

Art. no.: PMab

Properties:

- PHACON Sinus Patient “Meyer“
- bone similar material for realistic haptic
- soft material for true-to-life larynx, esophagus and stomach
- detailed epiglottis and vocal chords
- tumor in the larynx
- cardia

PATIENT „MEYER“ for sinus lift

The extended Sinus Patient „Meyer“ is lined on the inside of the maxillary sinuses with an artificial mucosa. It is suitable for the training of the techniques in the placement of dental implants and practicing and demonstrating the sinus lift. The endoscopy of the maxillary sinus via the canine fossa and transnasal approaches can be trained. The orientation of the topographic anatomy of implant augmentation and “Schneiderscher Membran” is possible by the simple opening of the maxillary sinus posterior wall.

Properties:

- Bone similar material for realistic haptic
- Detailed ethmoid cells and frontal sinus
- Imitation of soft tissue (mucosa)
- Flexible turbinates
- Pituitary gland
- Optic nerve
- Vessels (e.g. Arteria carotis, A. sphenopalatina)
- Important landmarks e.g. Processus uncinatus, Bulla ethmoidalis and others

Properties:

- with simulation of soft tissue
- Functional Endoscopic Sinus Surgery (FESS)
- transnasal and transethmoidal access to the pituitary gland
- orbital decompression
- decompression of the optic nerve

„Meyer“
for sinus lift

Art. no.: SNac

part of the maxillary sinus
for sinus lift

Art. no.: SNag

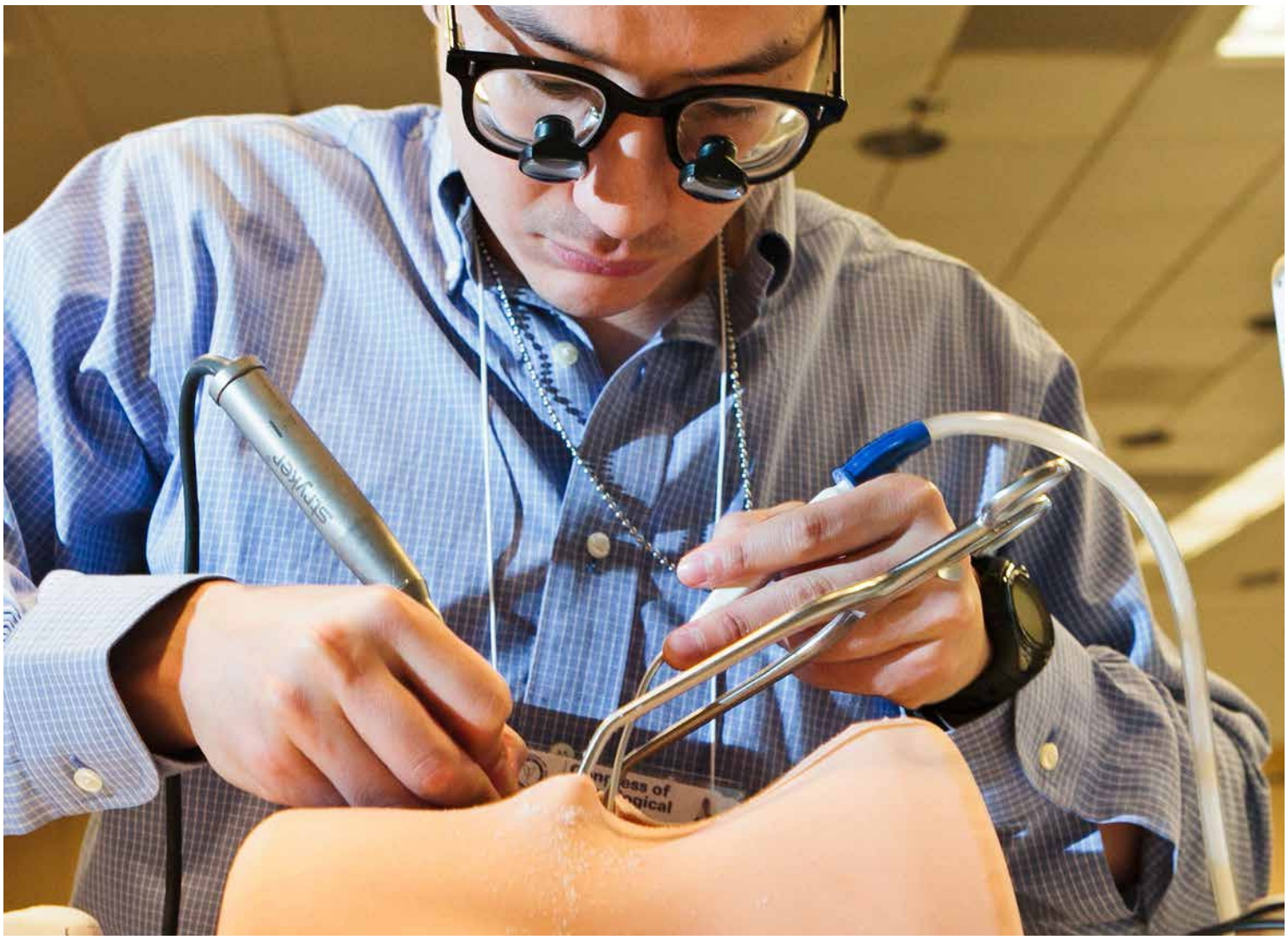
Properties:

This model of the part of the maxillary sinus is a smaller version for the practice of the sinus lift. The portion of the maxillary sinus is lined with artificial mucosa.

- with simulation of soft tissue

NEURO

PHACON Neuro System
PHACON Cervical Spine System
PHACON Thoracic Spine System
PHACON Lumbar Spine System



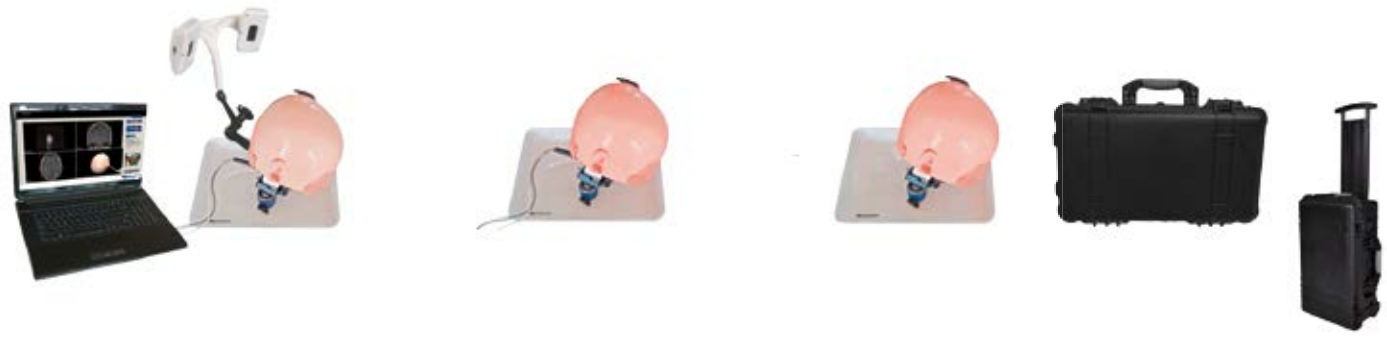
PHACON NEURO SYSTEM

The „PHACON Neuro System“ is a training system to fully simulate various operational openings of the skull. Starting from the selection of different patient cases, the associated surgical planning, to the implementation of the skull opening up to an intraoperative simulated imaging for the surgeon allows a holistic training.
In the included software, the position of the instruments during the exercise is presented in real time within the CT data and a 3D animation.

SYSTEM VARIANTS

With the PHACON Neuro System surgeries as craniotomy can be trained very realistically. The belonging navigation software is monitoring the position of the instrument in use during the simulation. The cranial callotte is replaceable, which allows an economic training.

PHACON provides a variety of system options. Up from the fully equipped system, including navigation software and full functionality in virtual assistance until the slim version, consisting of the skull and a stable Holder Tray for a save fixation of the Neuro Patient.



The PHACON Neuro System can facilitate the organisation of your training course with the following advantages:

- Realistic feel of surgery
- The replaceable Neuro Patient allows cost-effective training
- Planning of the simulated surgery based on different data sets
- Monitoring and navigation of the performed steps
- Automatic tracking of the instruments and their movements
- Detection of risk structures
- Evaluation of the operational history

Fully equipped with navigation

Properties:

Fully equipped with navigation system for the training with virtual assistance and full functionality.

- 1 Neuro Patient „Becker“
- 1 base system with electronic
- 1 holder with tray
- 1 laptop with navigation software
- 1 pointer
- 1 instrument trackerset
- 1 tracking camera
- 1 transport case

Art. no.: S-36

Extendible

Art. no.: S-37

Properties:

Extendible option as combinable system

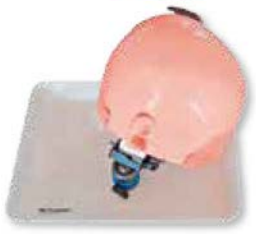
- 1 Neuro Patient „Becker“
- 1 base system with electronic
- 1 holder with tray
- 1 laptop with navigation software
- 1 transport case (for hand-luggage)
- combineable with Extension set: Art.no.: E (page 32)

Basic

Properties:

Basic variant as stable and adjustable skull holder for the PHACON Neuro Patient.

- 1 Neuro Patient „Becker“
- 1 base system
- 1 holder with tray
- 1 transport case (for hand-luggage)



Art. no.: S-41

PATIENT „BECKER“

On PHACON Neuro Patient „Becker“ the opening of the skull, e.g. during a tumor surgery, can be practiced under realistic conditions. Hereby, all typical instruments that are used in a real intervention, can be applied. The Neuro Patient is inserted into the PHACON Neuro System and can be easily replaced after the training.

Properties:

- Skin
- Temporalis muscle
- Cranial callotte
- Dura
- Special developed bone similar material by PHACON for a realistic haptic
- Realistic drilling properties

Realistic opening of the skull on the Neuro Patient „Becker“

Patient „Becker“

Properties:

- skin
- temporalis muscle
- cranial callotte
- dura
- special developed bone similar material by PHACON
- realistic drilling properties

Art. no.: SHMaa

Replication of temporalis muscle

Patient „Graf“

Art. no.: OP0021

Properties:

- dura
- cortical and cancellous bone
- realistic drilling properties
- for craniotomy training and ultrasonic asperator use

„Graf“

Detail

- dura
- cortical and cancellous bone

CERVICAL SPINE SYSTEM

The PHACON Cervical Spine System allows classical surgeries like:

- Planning of access paths and operative strategies
- Training of use of surgical instruments
- Decompression, e.g. laminectomy or hemilaminectomy
- Treatment of fractures with ventral osteosynthesis with lag screws

The anatomical structures are gained from a real patient CT-scan.
The vertebra material consists of a bone similar material, especially developed by PHACON. Soft tissue like the spinal cord is realistically reproduced with special soft material. The surgeon can use the same instruments as he usually uses during a real surgery. To reduce costs, only the Cervical Spine Patient has to be exchanged from the system after the training unit.

SYSTEM VARIANTS

The PHACON Cervical Spine System offers training opportunities in the field of neuro- and trauma surgery, as well as orthopedy. The haptic feel of surgery with real instruments can be learned on the artificial specimen (PHACON Cervical Spine Patient). Orientation within the related CT-scan of the model in the navigation software can be practiced. Injuries and pressure on the spinal cord are detected and evaluated objectively during the surgery in real-time.

PHACON provides a variety of system options. Up from the fully equipped system, including navigation software and full functionality in virtual assistance until the slim version, consisting of a stable Holder Tray for a save fixation of the Cervical Spine Patient.

NEURO Cervical Spine System Variants

Fully equipped with navigation

Art. no.: S-07

Properties:

The PHACON Spine System with navigation software and all components included for full functionality during your training session.

- 1 laptop with navigation software
- 1 base system with electronic and camera
- 1 skin
- 1 Cervical Spine Patient dorsal
- 1 Cervical Spine Patient ventral
- 1 instrument tracker set

Extendible

Properties:

Extendible to full equipped system with navigation

- 1 base system with electronic
- 1 skin
- combineable with Extension set: Art.no.: E (page 32)

Art.no.: S-08

Basic

Art. no.: S-44

Properties:

Extendible to full equipped system with navigation

- 1 base system
- 1 skin

Spine Holder Tray

Properties:

- 1 holder with tray
- 1 joint head

The Spine Holder Tray can be applied for all vetral types of PHACON Cervical Spine Patients.
Rotate and adjust your Cervical Spine Patient with the twistable joint head.

Art. no.: S-33

PATIENTS

The PHACON Cervical Spine Patients are artificial specimen to practice different surgeries.
They are removed after the training session and can be replaced easily by a new model.
This concept achieves a cost-saving course organisation, because only the Cervical Spine Patient has to be exchanged from the system. To automatically detect injuries of risk structures, the models contain electronic sensors (electrical detection).
The PHACON Cervical Spine Patients can be reordered at PHACON any time.

Electrical detection enables the tracing of injuries of structures of risk within the connected PHACON navigation system. It enables an optic and acoustic signal, if the following structure is injured:

- Spinal cord

Additional, the mechanical pressure on the spinal cord with an instrument is measured and displayed by the help of integrated pressure sensors.

PATIENT „SCHUBERT“

The PHACON Cervical Spine Patient „Schubert“ is based on a patient CT of a cervical spine and offers the possibility to perform surgeries like laminectomy, decompression or fixation of contiguous vertebra. Cancellous bone or pedicle screws can be applied or the placing of a Fixateur interne can be trained. The vertebra consists of an inner material similar to spongiosa, coated by a harder, bony material to imitate the Substantia compacta.

Properties:

- Bone-similar material for realistic feel of surgery
- Anatomical bone properties of the vertebra like cortical and cancellous bone
- Imitation of spinal cord with dura

The Cervical Spine Patient „Schubert“ consists of two exchangeable parts:

The dorsal upper part and the ventral lower part. Both parts are connected by a click-mechanism and built the model of the cervical spine.

Electrical detection enables the tracing of injuries of structures of risk within the connected PHACON navigation system. It enables an optic and acoustic signal, if the following structure is injured:

- Spinal cord

Additional, the mechanical pressure on the spinal cord with an instrument is measured and displayed by the help of integrated pressure sensors.

„Schubert“

Art. no.: Spaa

Properties:

- dorsal part “Schubert dorsal“
- bone properties of cortical and cancellous bone

„Schubert“

Properties:

- ventral part “Schubertventral“
- with pressure sensor detectable spinal cord

Art. no.: Spab

PATIENT „FISCHER“

The PHACON Thoracic Spine Patient „Fischer“ is a detailed anatomical model of the human thoracic spine. The artificial specimen is based on a high-resolution CT dataset of an adult.

The model is suitable for:

- Planning of special accesses and operative strategies
- Training of use of surgical instruments
- Decompression, like laminectomy and hemilaminectomy
- Ablation of bone with bone milling devices
- Treatment of fractures with ventral osteosynthesis with lag screws
- Fitting of a Fixateur interne
- Surgical instrumentation, e.g. insertion of surgical screws (pedicle screws, cancellous bone screws, cortical screws etc.)
- Disc surgery, e.g. removal of disc tissue

- Bone-similar material, especially developed by PHACON, for a realistic haptic
- True-to-life drilling
- Imitation of natural bone properties of the vertebra with cortical and cancellous bone

„Fischer“

Properties:

- bone similar material, especially developed by PHACON, for a realistic haptic
- true-to-life drilling
- imitation of natural bone properties of the vertebra with cortical and cancellous bone
- elastic discs with Nukleus pulposus and Anulus fibrosus
- elastic connection of the intervertebral joints

Art. no.: Spca

„Fischer“
with soft tissue

Art. no.: Spcb

Properties:

- bone similar material for a realistic haptic
- imitation of cortical and cancellous bone
- elastic discs with Nukleus pulposus and Anulus fibrosus
- elastic connection of the intervertebral joints
- imitation of fat-, skin- and muscle layer with soft material

Universal Holder Tray

Properties:

- 1 joint head
- 1 clamp
- 1 tray

Art. no.: S-42

LUMBAR SPINE SYSTEM

The PHACON Lumbar Spine System is designed for the training of:

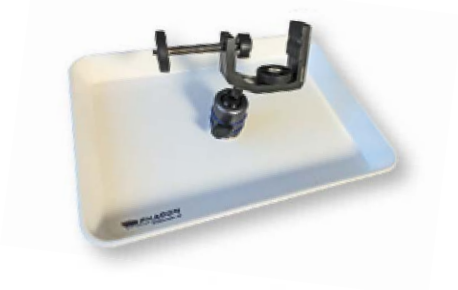
- Planning of access paths and surgery strategies
- Strategies of endoscopic disc surgery
- Handling of instruments

For a training as realistic as possible, the navigation software offers the possibility to disable the consistent detection of the instrument and instead display the current position in the CT and 3D view by push of a button (similar to a c-arm image). The 3D jointed-arm allows to individually adjust the navigation camera to prevent any obstruction during the training.

SYSTEM VARIANTS

The PHACON Lumbar Spine System is applicable for the training of minimal invasive surgical interventions in the lumbar spine region. The patient is simulated in prone position and the intervention area is focused on vertebras L3-L5. Like all PHACON Systems, the Lumbar Spine System is connected to a navigation software. During the training, the position and movement of the instrument in use is displayed within the related CT-images. Arbitrary instruments can be used by the help of the belonging tracker set.

PHACON provides a variety of system options. Up from the fully equipped system, including navigation software and full functionality in virtual assistance until the slim version, consisting of a stable Holder Tray for a save fixation of the Lumbar Spine Patient.



Fully equipped with navigation

Properties:

The PHACON Lumbar Spine System with navigation software and all components included for full functionality during your training session.

- 1 laptop with navigation software
- 1 base system with electronic and camera
- 1 torso
- 1 Lumbar Spine Patient „Bach“
- 1 instrument tracker set

Art. no. : S-39

Extendible

Art. no.: S-09

Properties:

Connect the Lumbar System „Extendible“ with the PHACON Extension set for full functional system with navigation.

- 1 base system with torso
- 1 holder with tray, camera and camera fixation

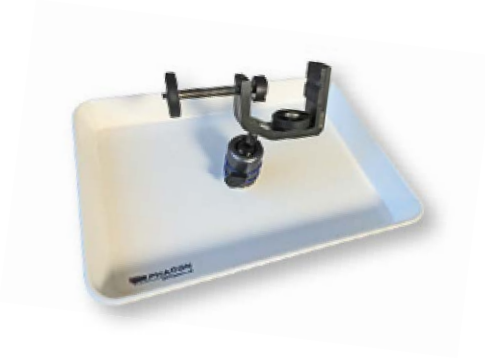
Basic

Properties:

- 1 base system with torso
- 1 holder with tray

Art. no.: S-43

Spine Holder Tray



Art. no.: S-42

Properties:

Rotate and adjust your Lumbar Patient with the twistable joint head.

- 1 holder with tray
- 1 joint head

PATIENTS

The PHACON Lumbar Spine Patients are artificial specimen to practice different surgeries. They can be removed from the related system and replaced after the training session by a new model. This concept achieves a cost-saving course organisation, because only the Lumbar Spine Patient and the torso insert needs to be exchanged from the system.

The PHACON Lumbar Spine Patients can be reordered at PHACON any time.

PATIENT „BACH“

The PHACON Lumbar Spine Patient „Bach“ is a detailed anatomical model of the human lumbar spine. The artificial specimen is based on a high-resolution CT dataset of an adult.

The model is suitable for:

- Planning of special accesses and operative strategies
- Training of use of surgical instruments
- Decompression, like laminectomy and hemilaminectomy
- Ablation of bone with bone milling devices
- Treatment of fractures with ventral osteosynthesis with lag screws
- Fitting of a Fixateur interne
- Surgical instrumentation, e.g. insertion of surgical screws (pedicle screws, cancellous bone screws, cortical screws etc.)
- Disc surgery, e.g. removal of disc tissue

- Bone-similar material,especially developed by PHACON, for a realistic haptic
- True-to-life drilling
- Imitation of natural bone properties of the vertebras with cortical and cancellous bone

„Bach“

Properties:

- bone similar material, especially developed by PHACON, for a realistic haptic
- true-to-life drilling
- imitation of natural bone properties of the vertebra with cortical and cancallous bone
- elastic discs with Nukleus pulposus and Anulus fibrosus
- elastic connection of the intervertebral joints

Art. no.: SPba

„Bach“
small

Art. no.: SPbb

Properties:

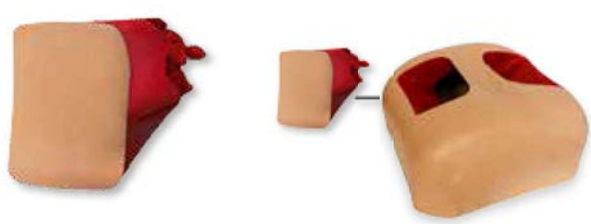
- vertebras L3 and L4
- bone similar material, especially developed by PHACON, for a realistic haptic
- true-to-life drilling
- imitation of natural bone properties of the vertebra with cortical and cancallous bone
- elastic disc
- elastic connection of the intervertebral joints

„Bach“
Torso insert

Properties:

The PHACON Lumbar Spine Patient „Bach“ - Torso insert is the exchangeable component of the torso and reaches until the spine. It is intended for the application of instruments.

- soft tissue layers:
- skin
- fat
- muscle



Art. no.: SPbd

Vascular Access System

The PHACON Vascular Access System is designed to train the cannulation of patients. Especially for dialysis patients the right technique of cannulation is important and needs to be trained properly.
Like all PHACON Systems, the Vascular Access System is connected to a navigation software. During the training, the position and movement of the instrument in use is displayed. Beside the blood pressure it is also possible to adjust the pulse of the system to have a realistic training situation. The blood pressure and pulse is adjustable to the preferred situation.

The sytem displays a realistic 3D-Image of the patients arm. Skin, muscle and fat layers can be made transparent. The system automatically records and detects your malpractice during the training session.

Properties:

- 1 base system with electronic
- 1 holder with tray
- 1 laptop with navigation software
- 1 instrument tracker set
- 1 tracking camera
- 1 blood pump (adjustable blood pressure, adjustable pulse, blood imitation)

Art. no.: S-45

VASC Vascular Access Patient

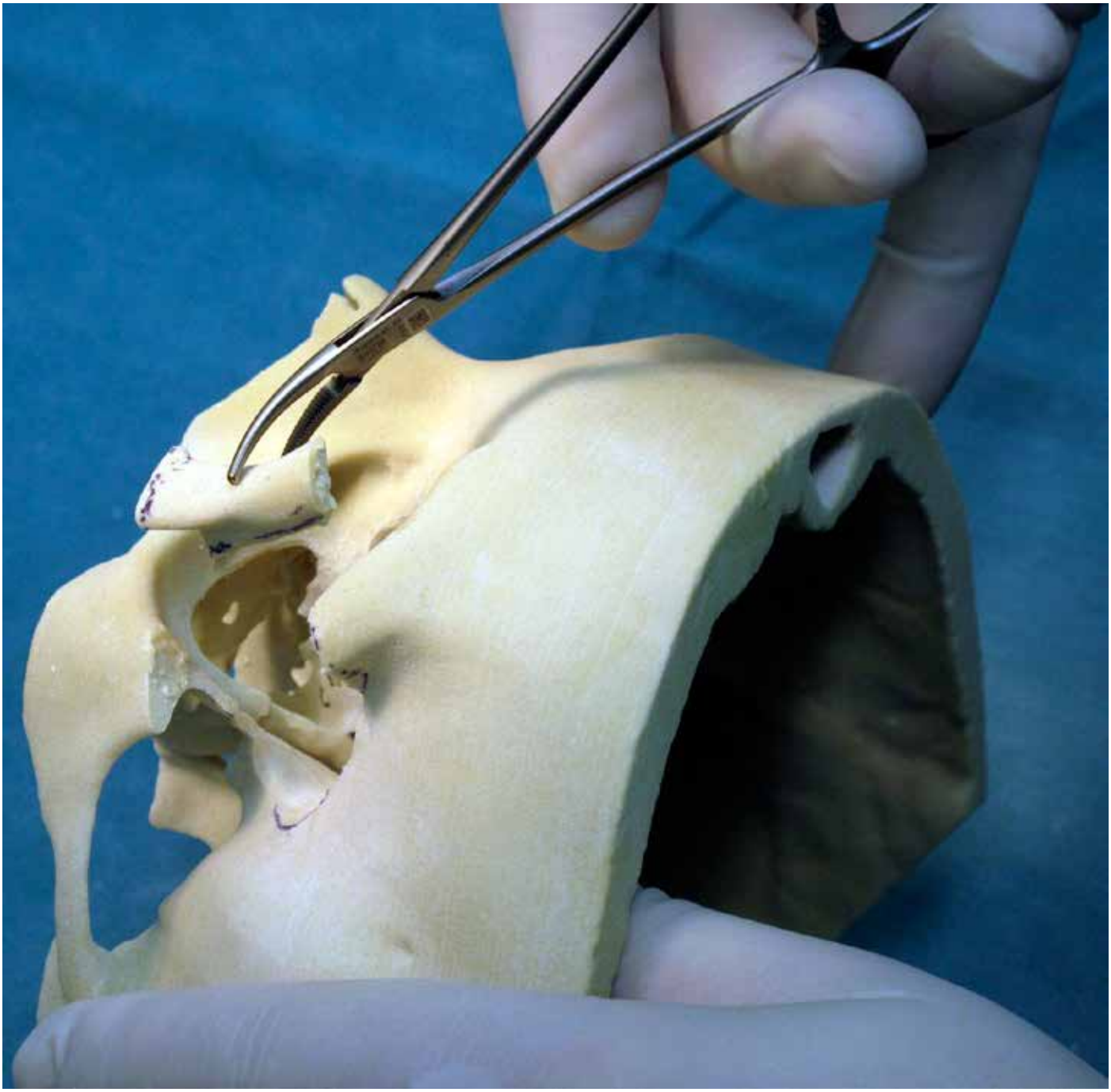
„Bauer“

Art. no.: VAaa

Properties:

- for cannulation
- vein and artery
- shunt
- at least ten cannulations possible
- noticeable pulse in the vessel
- skin, fat and muscle layer

PHACON Preoperative/ Patient individual 3D models

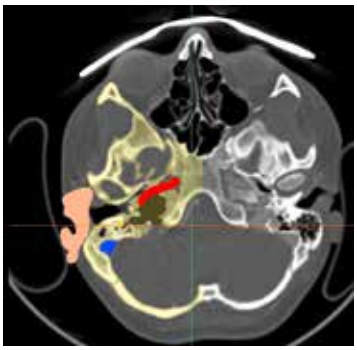


PATIENT INDIVIDUAL 3D MODELS

PHACON Patient individual 3D models:

Based on CT-, MRI-, or DVT-images, patient individual 3D models can be created for preoperative planning of complex surgical interventions.
By the help of the model, the position relation between target area and structures at risk (vessels, nerves etc.) can be analysed. With this kind of OR planning surgeons receive additional information and can better estimate risks.

All that is required are the recorded CT, MRT or DVT data of the patient. In a very short time, our customers receive the 3D model of the bone based on this record.
You create and segment 3D models from CT data yourself? Simply send us the 3D-file you prepared and you get the exact model based on your specifications.



Which advantages does the 3D-model provide?

- Significant relief of implant adaptation before the surgery on the model
- Saving the subsequent operations time
- Risk and complication minimization by optimal preparation
- Confidence in the patient interview by demonstration on the model
- Illustration by the help of the model in clinical conferences
- Visualisation of pathology and anatomical location relationships
- Realistic haptic (bone-like material) and 3D spatial impression
- Coloured representation of areas
- Rapid availability

PATIENT INDIVIDUAL 3D MODELS

PHACON Patient individual 3D models

Clinical benefit:

- Patient individual OR planning
- Visualisation of the pathology and anatomical position relationship
- Demonstration in the tumor board and clinical conferences
- Demonstration in the patient talk
- Realistic haptic, texture and 3D-representation
- Segmentation report with advices of possible fuzziness
- Possible cost absorption by health-insurance companies
- Fast availability

Material

You can choose between different materials for your individual 3D model. PHACON offers an especially by PHACON developed, bone similar material (no plastic). This material has the same sawing-, milling- and drilling characteristics as real bone. Alternatively, the model can be produced from plastic material (Polyamide). This offers good break resistance.

Colour

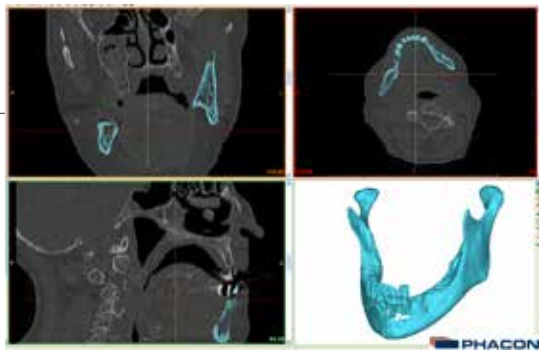
We can accent certain areas or structures of your model with color to highlight specific details.

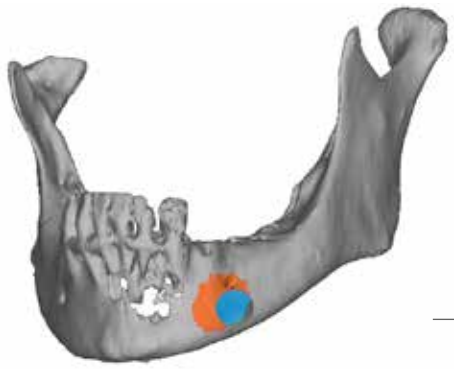
Patient individual 3D models

Individual models based on CT-data

Required data:

- Patient individual 3D Models are generated from
- patient individual CT, MRI or DVT data
- based on these data sets, the virtual 3D model is generated
- a clear and good quality of the CT- Images is important, because it effects the quality of the 3D image
- self designed 3D files (STL, PLY) can also be used for the manufacturing process



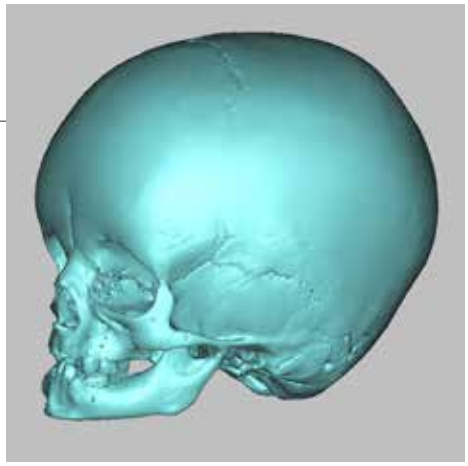


Prepress process:

- After generating the 3D model on the computer, we carefully check the quality and ´repair´ holes and bad areas
- for a clean and high-quality 3D printed model, the surface is smoothed
- patients name, date of CT recording or other required information can be labeled directly on the model
- regions of interest specified by the surgeon can be printed in different colours

General information:

- PHACON produces individual models of all body parts depending on the surgeons demands
- various anatomies from small children, adults and even up to veterinary models are possible to be produced
- Important!: PHACON 3D models are not certificated as medical devices and are not intended to be used in or at the patient



PREO Individual 3D models

Examples of preoperational models

Cross section of Skull

Cross section of a midface part

Postoperative skull model

Part of the frontal sinus

Parts of the hipbones of a tiger

Tumor at optic nerve and muscle

Skull and mandible model

Temporal bone section

Pelvis model

Notes:

version: C1

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