

ENDOSCOPIC TRANSNASAL SURGERY OF THE SKULL BASE THE BETTAG/SCHÄFER TECHNIQUE



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Hospital of the Brothers of Mercy of Our Lady of Perpetual Help, Trier, Germany.



Trier's best-known landmark: the Porta Nigra.

Endoscopic Transnasal Surgery of the Skull Base – The Bettag/Schäfer Technique

Endoscopic transnasal transsphenoidal pituitary surgery is an advancement of traditional microsurgical techniques. Its advantages include better illumination of the operative field and more accurate control of the tumor resection.

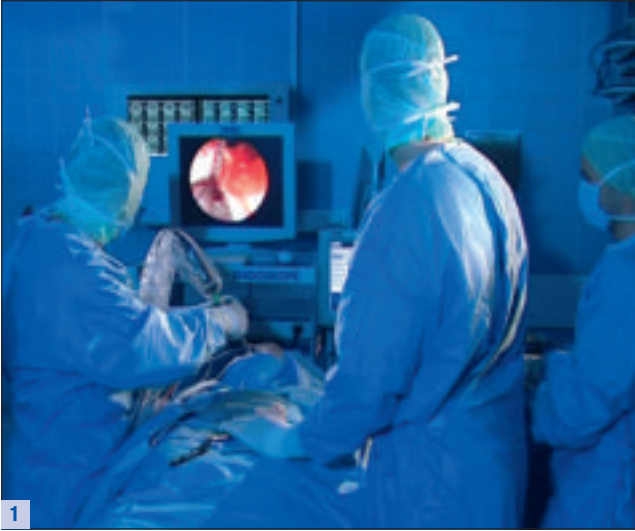
Basically any functioning or nonfunctioning micro- and macroadenoma is accessible by endoscopic surgery

through the transnasal transsphenoidal route. The surgical treatment of pituitary adenomas with significant para-, supra- or retrosellar extension as well as craniopharyngiomas, clivus chordomas, and other tumors of the anterior skull base requires extended skull base approaches under purely endoscopic control.

Advantages of the Operating Technique

Endoscopic transnasal skull base surgery offers the following advantages over standard microscopic techniques:

- Excellent illumination of the operative field by delivering light close to the anatomical structures of interest
- High image resolution with a wide-angle view
- Use of scopes with viewing angles of 30° to 45°, expanding the range of areas that can be inspected
- High maneuverability of surgical instruments, unhampered by a nasal speculum
- Little trauma to the mucosa
- More accurate differentiation of normal and neoplastic tissues



Details of the Operation

Operating Room Setup

The surgeon, assistant, and scrub nurse are standing at each side of the operating table and watch the monitor screen, which is set up behind the patient's head. It is most convenient for a right-handed surgeon to stand on the left side of the table (patient's right side).

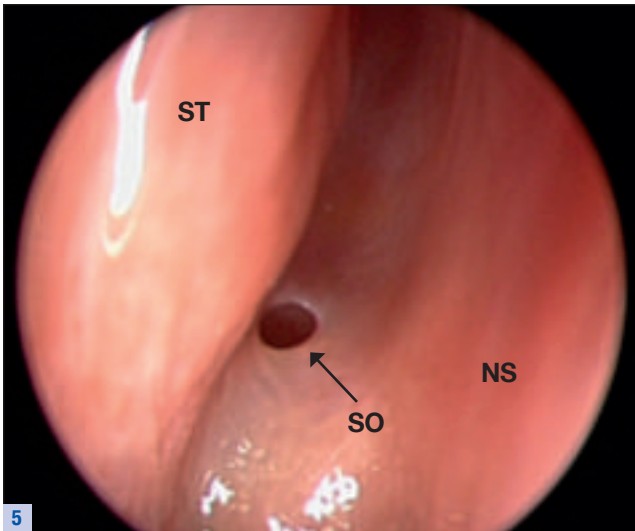
Operative Technique

Pituitary surgery should employ a 3-hand technique in which the surgeon generally holds the pituitary endoscope with a THUMFART handle in the left hand and a working instrument (drill, curette, etc.) in the right hand while an assistant manipulates the suction.



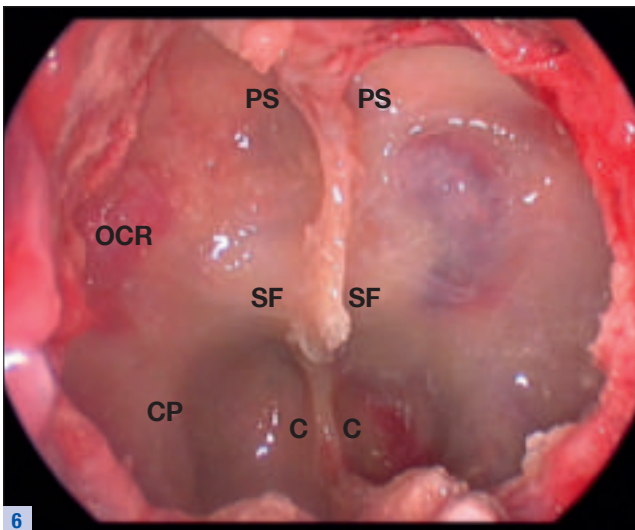
The surgeon should definitely use a bimanual operating technique for complex tumors and extended skull base approaches. In this case the assistant introduces the Bettag/Schäfer scope, which is 30 cm long, along the upper border of the nasal cavity and instills irrigating fluid as needed.





Ostium in the Anterior Wall of the Right Sphenoid Sinus

The ostium of the sphenoid sinus (**SO**) is identified between the nasal septum (**NS**) and the superior turbinate (**ST**).

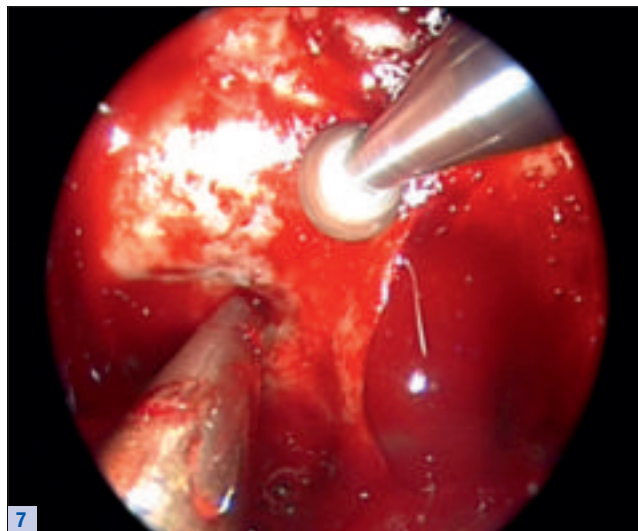


Sphenoid Sinus

After the removal of the intrasphenoidal septa, the key anatomical landmarks of the anterior skull base can be identified: optico-carotid recess (**OCR**), planum sphenoidale (**PS**), sellar floor (**SF**), clivus (**C**), and carotid protuberance (**CP**).

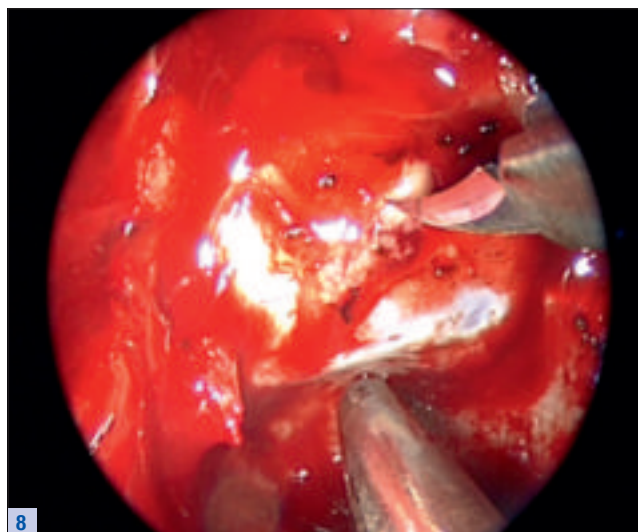
Opening the Sellar Floor

The floor of the sella is opened with a coarse diamond drill.



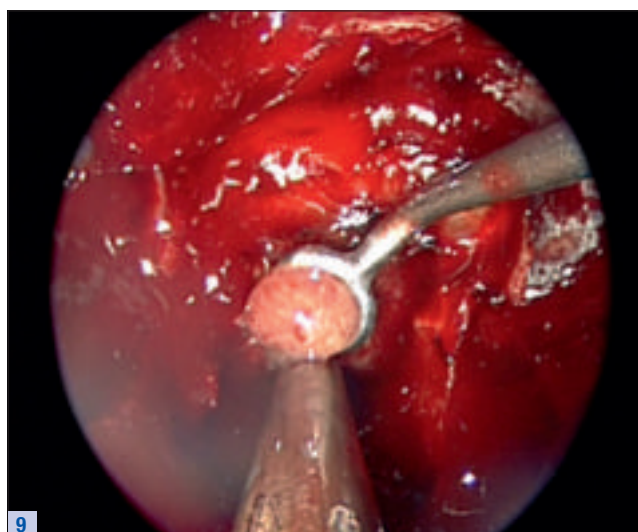
Incision of the Dura

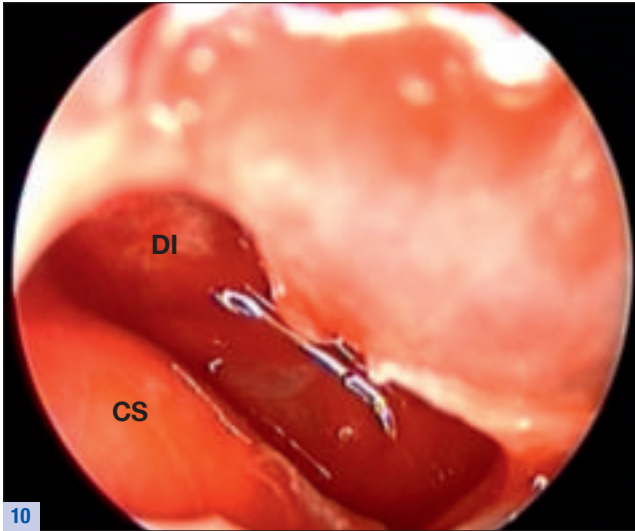
The dura is incised using a sickle knife with a retractable blade.



Adenoma Curettage

The tumor capsule is opened, and various ring curettes are used to mobilize the tumor tissue and deliver it to the tip of the suction tube.

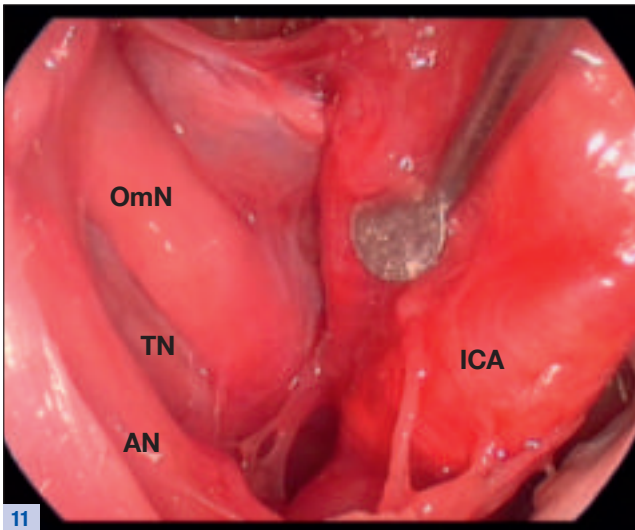




Endoscopic Appearance after Tumor Resection

Endoscopic inspection after successful adenoma removal. The medial wall bordering the cavernous sinus (**CS**) is visible on the left side, and the sellar diaphragm (**DI**) is visible above.

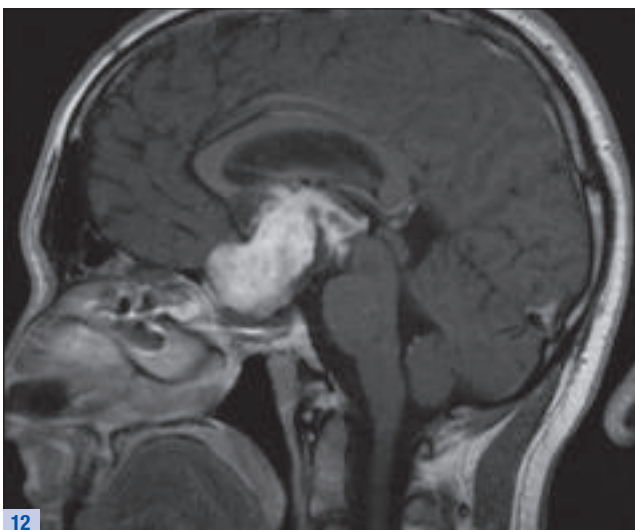
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Parasellar Anatomy

Soft tumors in the cavernous sinus (**CS**) can be removed until neurovascular structures are exposed: internal carotid artery (**ICA**), oculomotor nerve (**OmN**), trochlear nerve (**TN**), and abducent nerve (**AN**).

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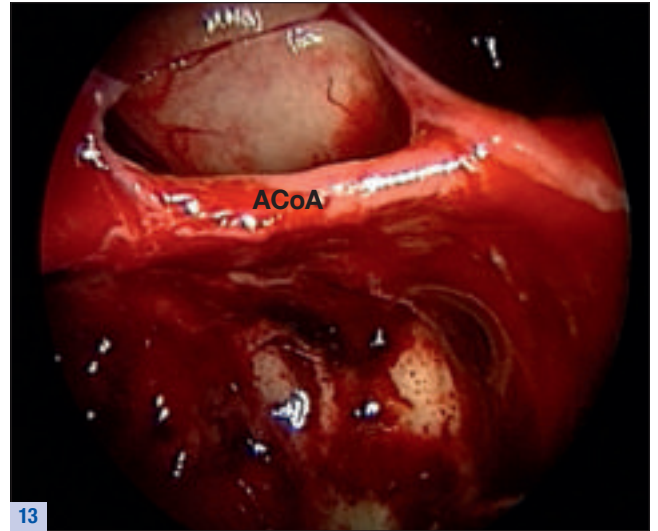


Extended Endoscopic Approach to the Skull Base (Transtubercular Transplanum Approach)

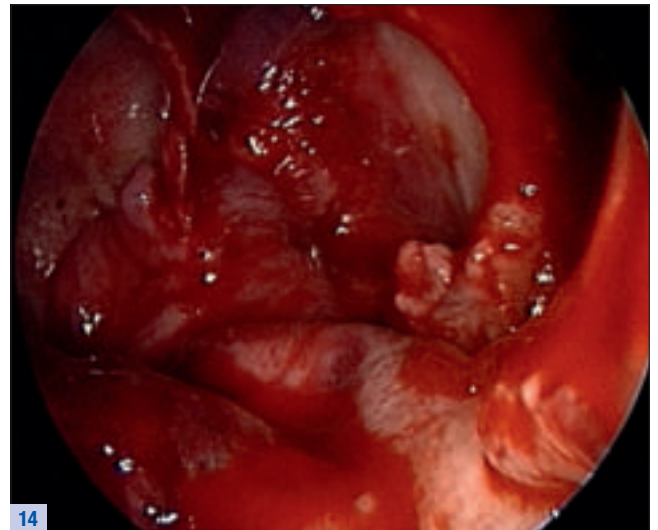
Preoperative sagittal MR image (after gadolinium administration) demonstrates a suprasellar tumor extending into the third ventricle.

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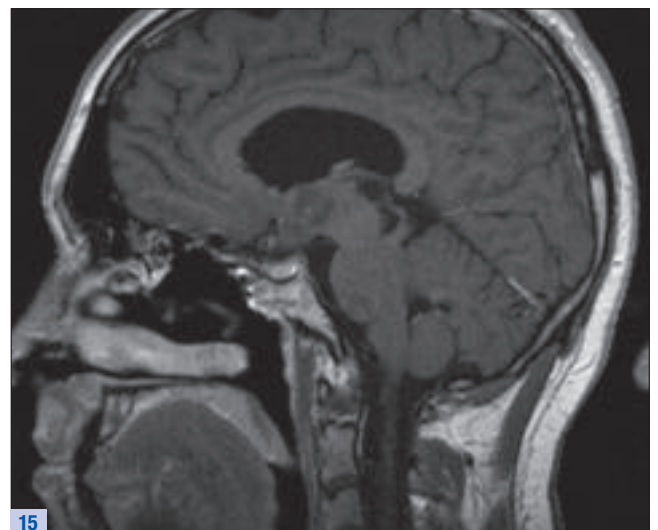
Following endoscopic tumor resection through a trans-tubercular transplanum approach, inspection reveals the flattened anterior communicating artery complex (**ACoA**) and the entrance to the third ventricle.



A mucosal flap is elevated from the nasal septum and transposed on its vascular pedicle to cover the dural defect.



Postoperative MRI demonstrates the pituitary gland in the sella. The tumor has been completely resected. The transposed flap appears as a soft-tissue mass in contact with the planum sphenoidale, sella, and clivus.



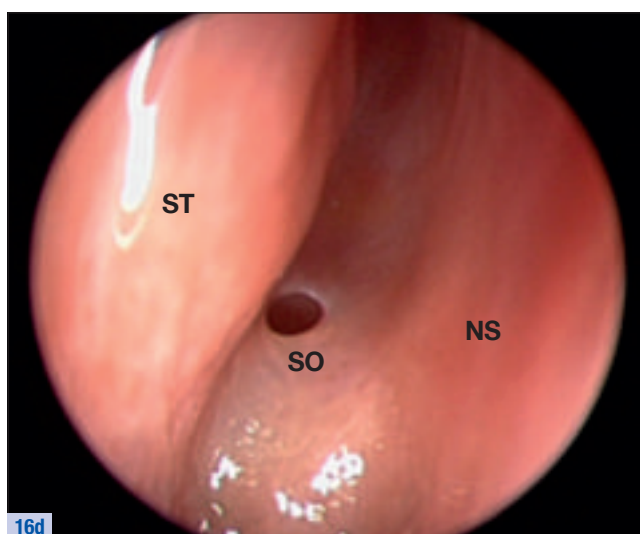
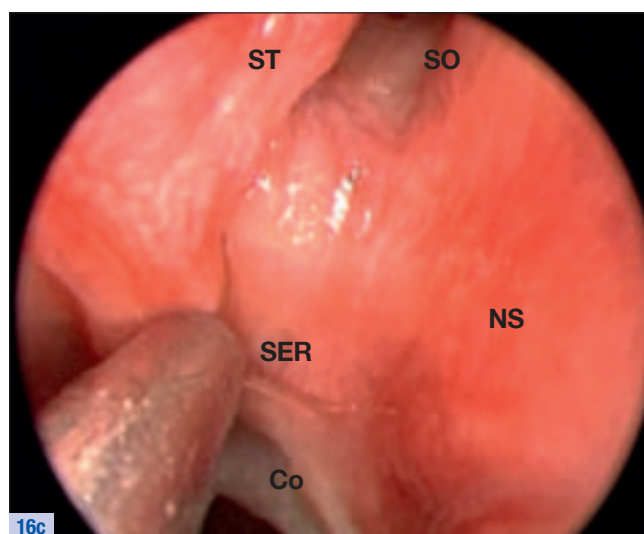
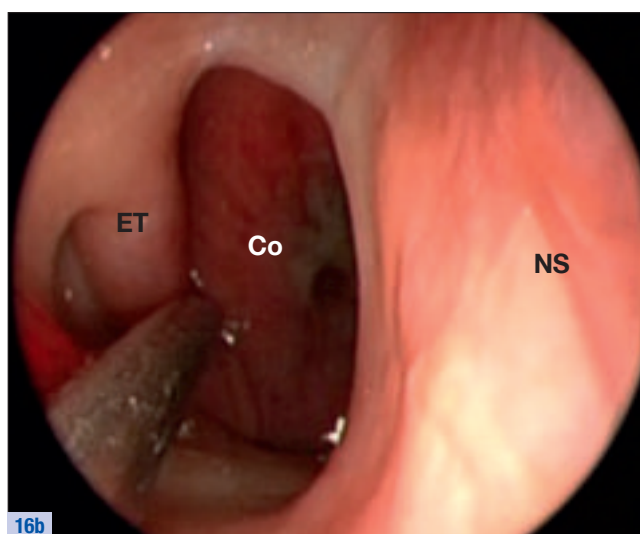
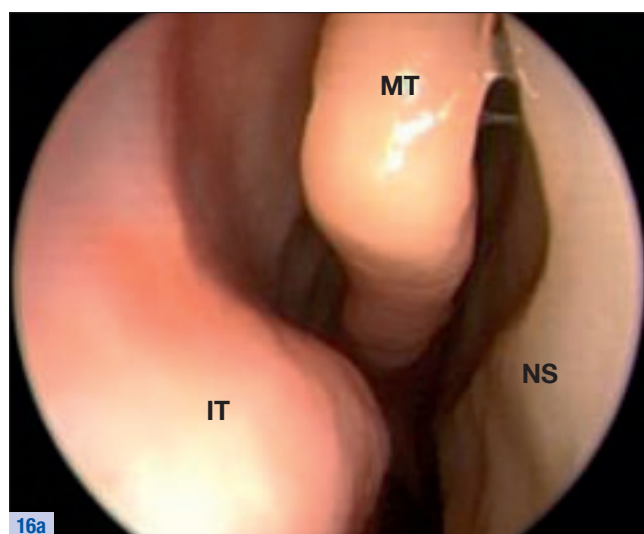
Anatomical Guide

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Suprachiasmatic Region
Cavernous Sinus
Retroclival Region
Intraventricular Region

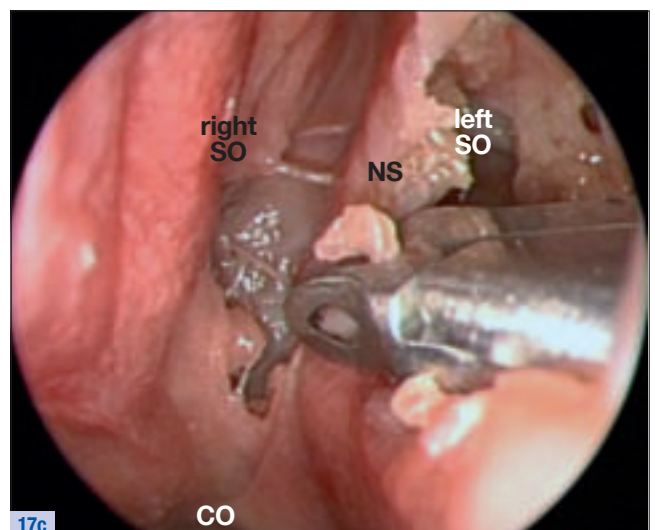
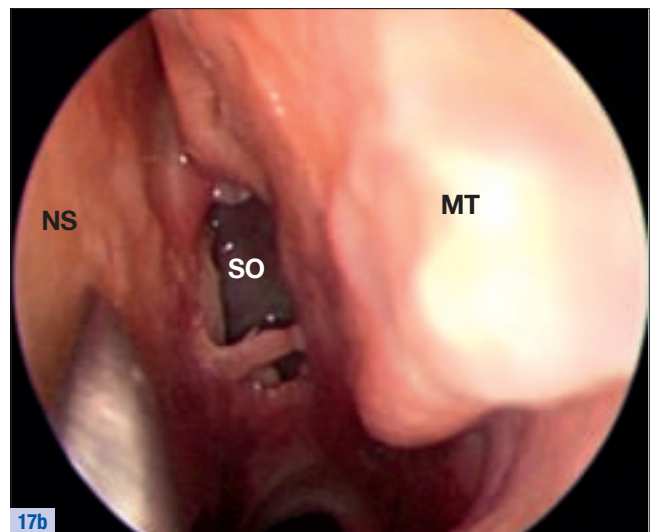
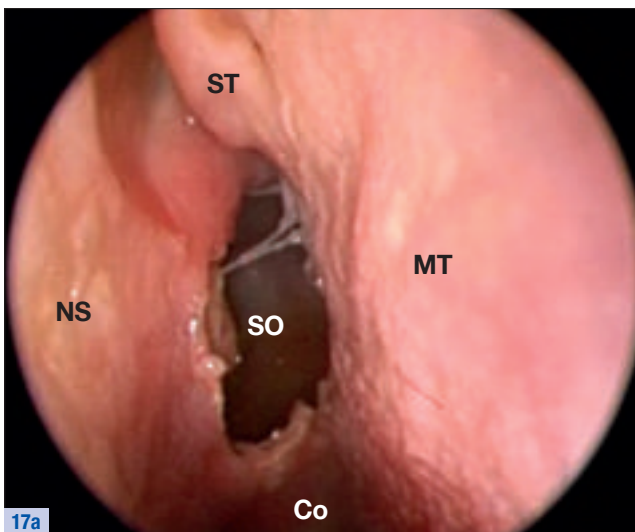
Nasal Cavity

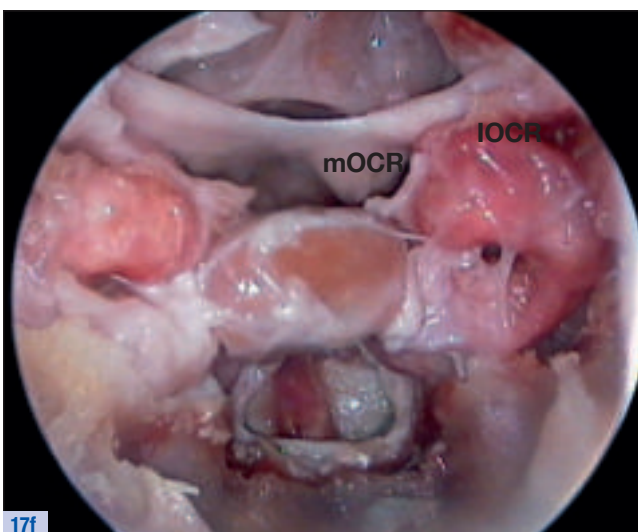
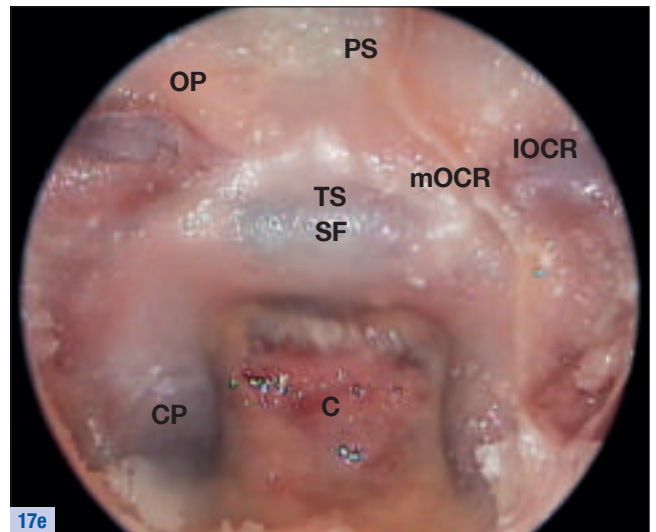
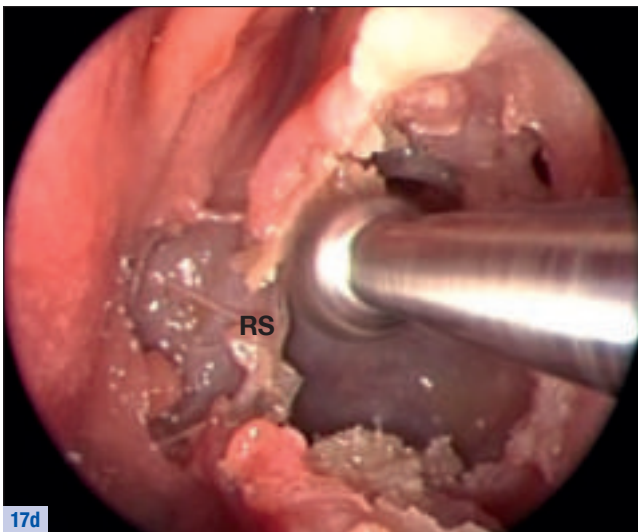
	Anatomical landmarks
Co	Choana
ET	Eustachian tube
IT	Inferior turbinate
MT	Middle turbinate
NS	Nasal septum
SER	Spheno-ethmoid recess
SO	Sphenoid ostium
ST	Superior turbinate



Sphenoid Sinus

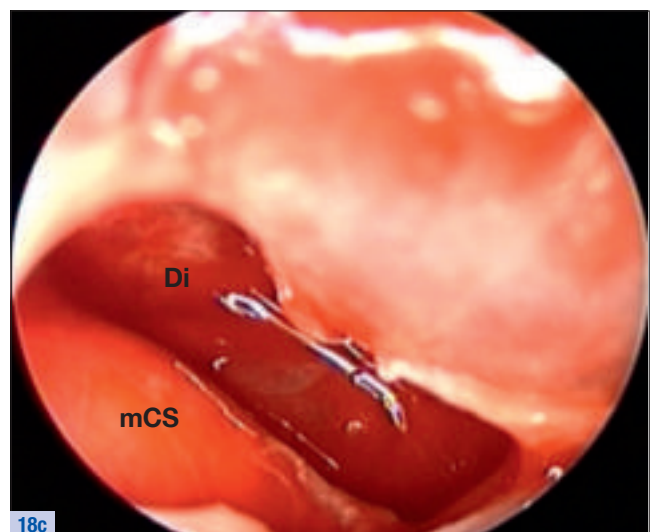
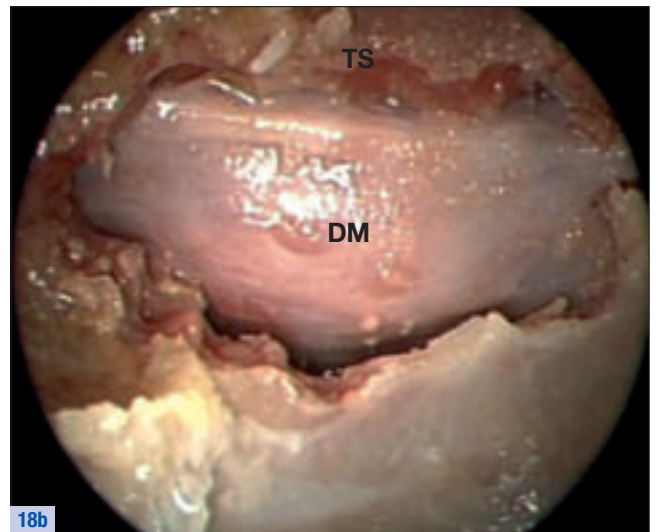
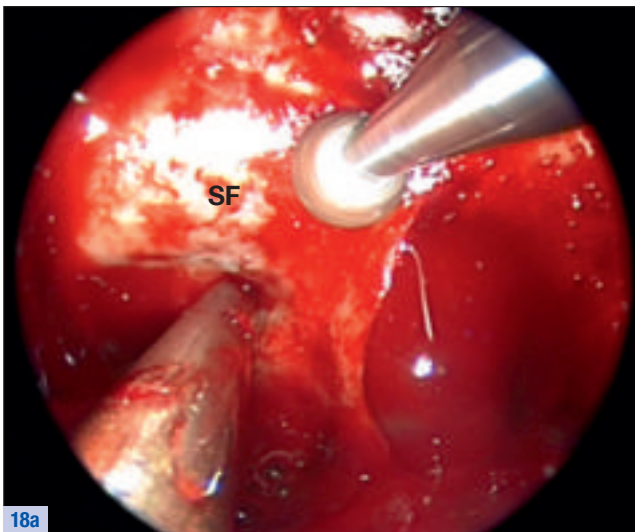
	Anatomical landmarks
C	Clivus
CP	Carotid protuberance
OP	Optic protuberance
IOCR	Lateral opticocarotid recess
mOCR	Medial opticocarotid recess
PS	Planum sphenoidale
RS	Rostrum sphenoidale
SF	Sellar floor
SO	Sphenoid ostium
TS	Tuberculum sellae





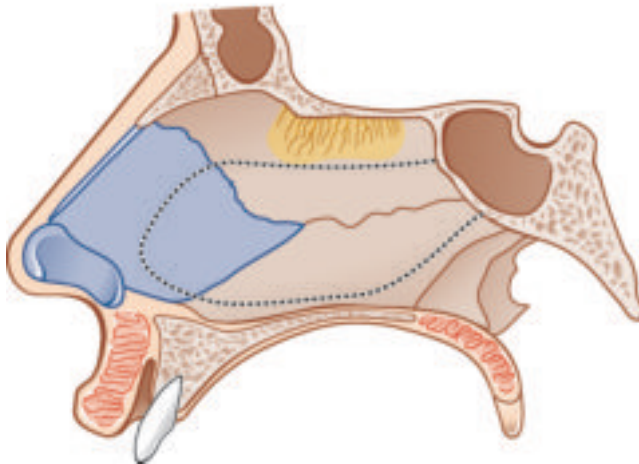
Sella

	Anatomical landmarks
Di	Sellar diaphragm
DM	Dura mater
mCS	Medial wall of cavernous sinus
SF	Sellar floor
TS	Tuberculum sellae

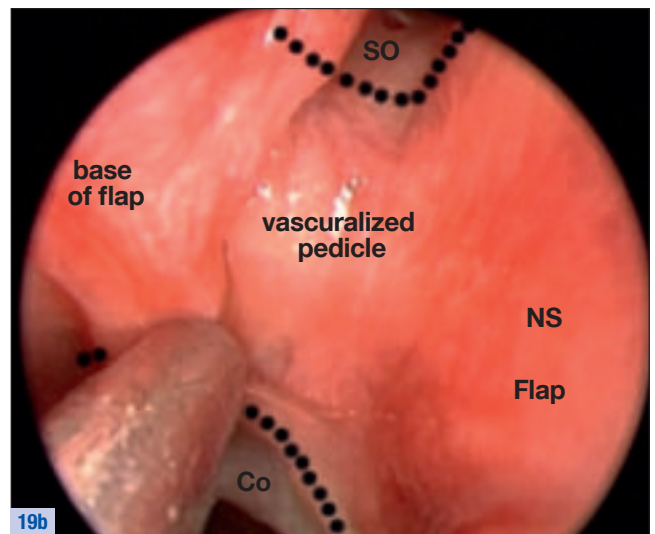


Nasal Septal Flap

	Anatomical landmarks
Co	Choana
NS	Nasal septum
SO	Sphenoid ostium



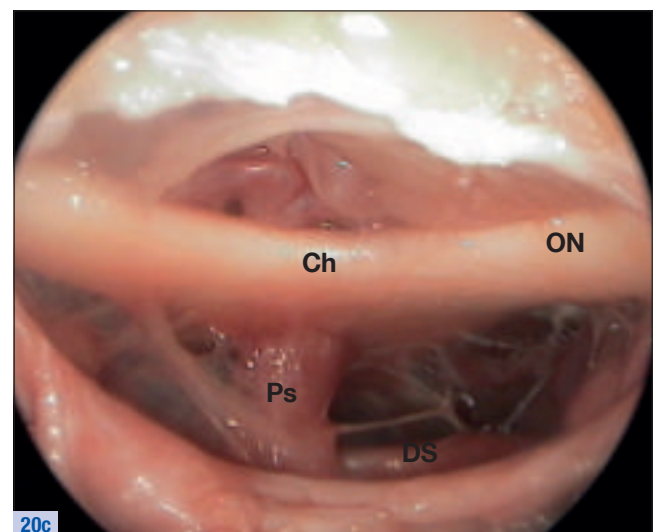
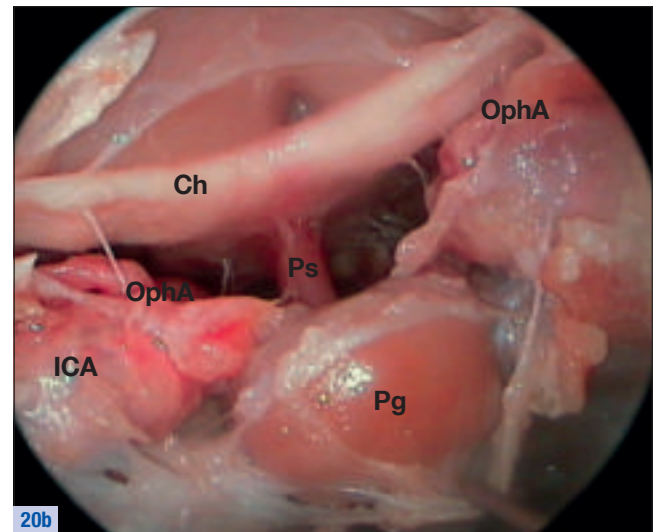
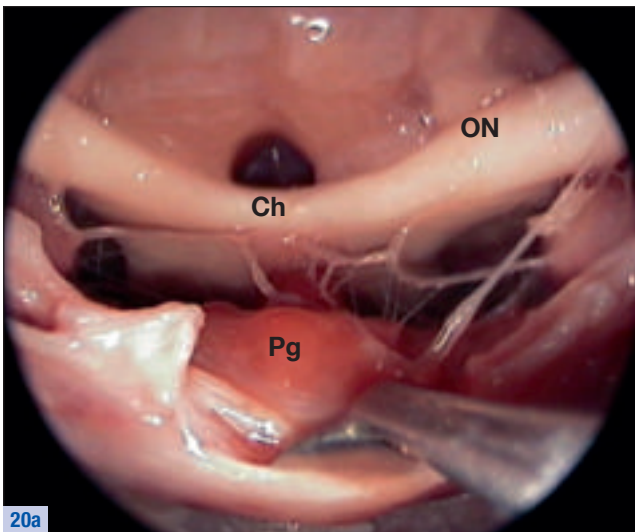
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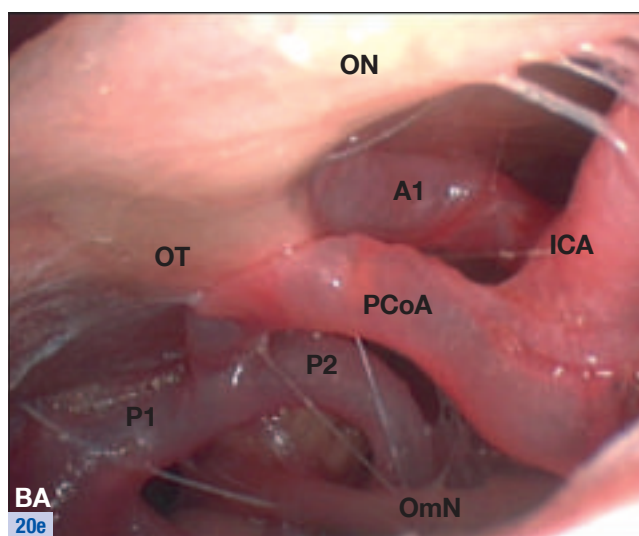
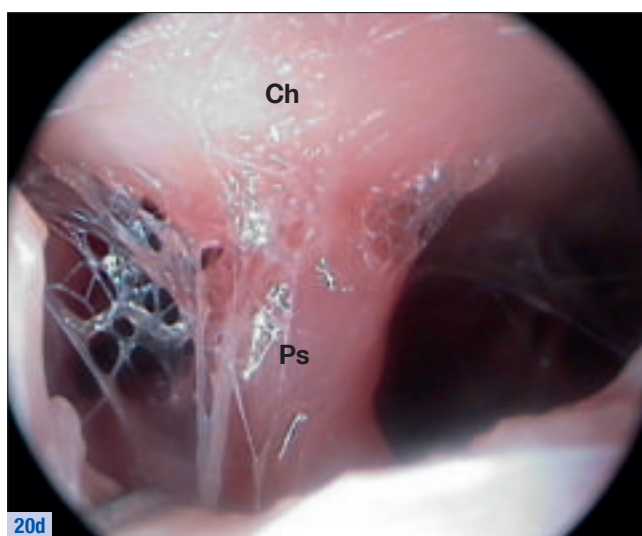
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Infrachiasmatic Region

	Anatomical landmarks
A1	A1 segment of anterior cerebral artery
BA	Basilar artery
Ch	Chiasm
DS	Dorsum sellae
ICA	Internal carotid artery
ON	Optic nerve
OphA	Ophthalmic artery

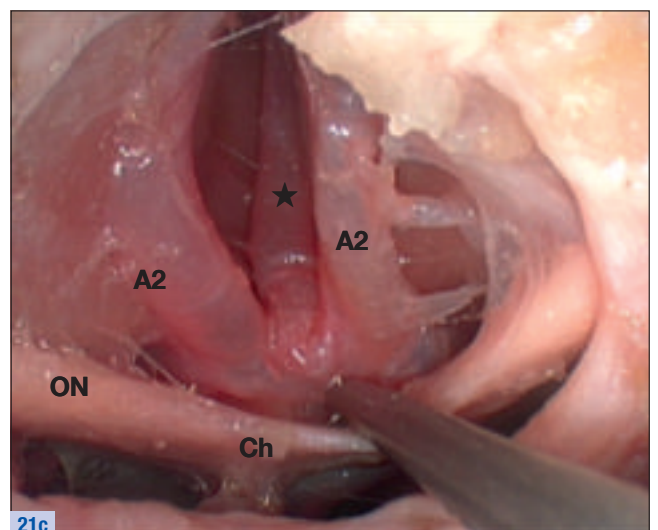
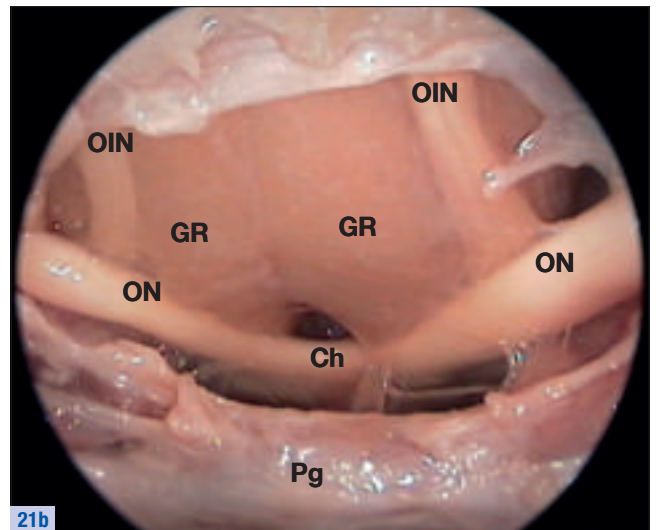
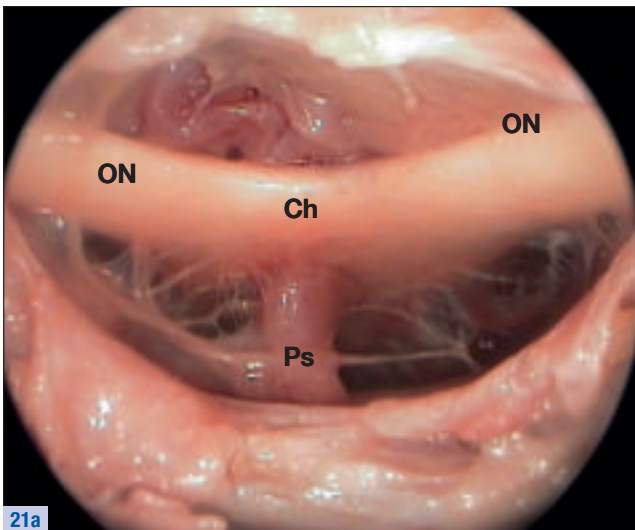


	Anatomical landmarks
OmN	Oculomotor nerve
OT	Optic tract
P1	P1 segment of posterior cerebral artery
P2	P2 segment of posterior cerebral artery
PCoA	Posterior communicating artery
Pg	Pituitary gland
Ps	Pituitary stalk



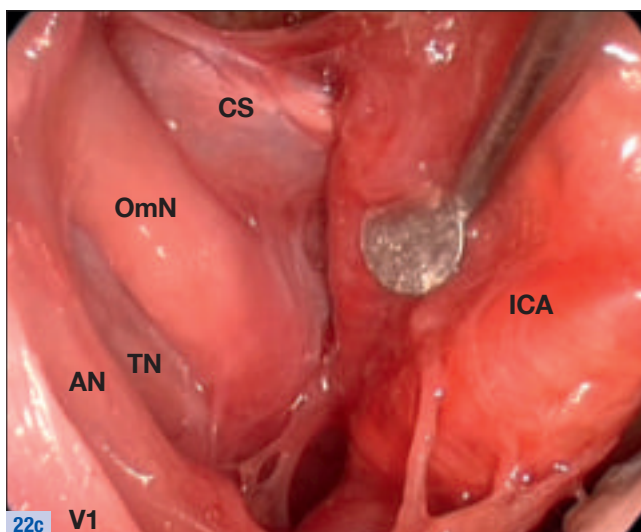
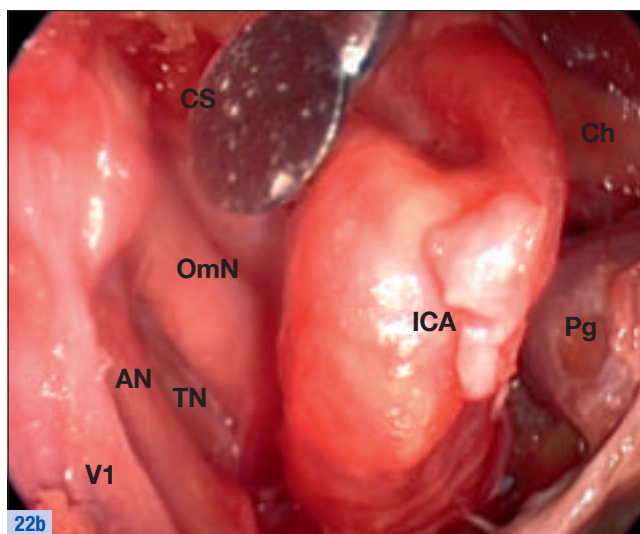
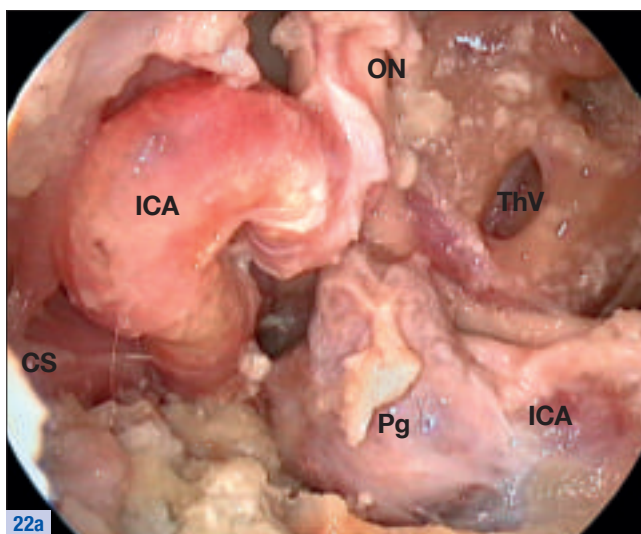
Suprachiasmatic Region

	Anatomical landmarks
A2	A2 segment of anterior cerebral artery
Ch	Chiasm
GR	Gyrus rectus
OIN	Olfactory nerve
ON	Optic nerve
Pg	Pituitary gland
Ps	Pituitary stalk
★	Pericallosal artery



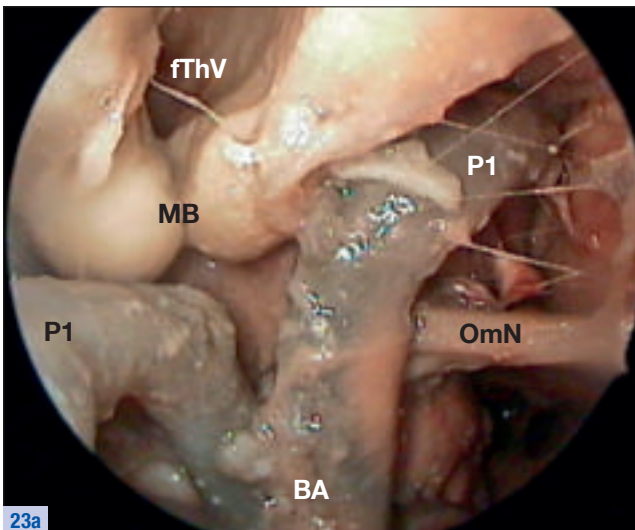
Cavernous Sinus

	Anatomical landmarks
AN	Abducent nerve
Ch	Chiasm
CS	Cavernous sinus
ICA	Internal carotid artery
OmN	Oculomotor nerve
ON	Optic nerve
Pg	Pituitary gland
ThV	Third ventricle
TN	Trochlear nerve
V1	First branch of trigeminal nerve

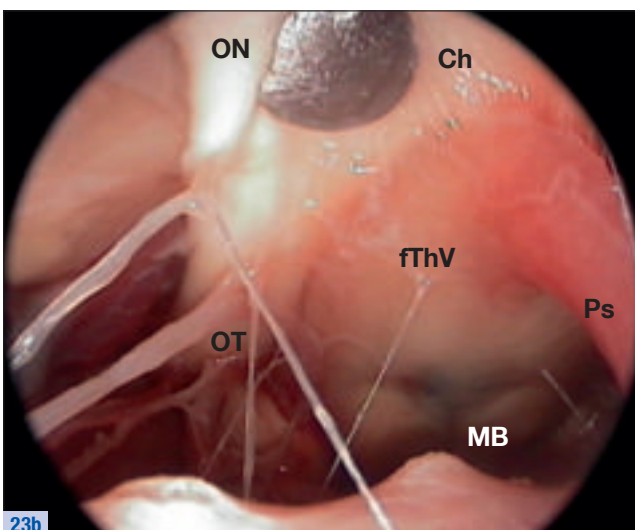


Retroclival Region

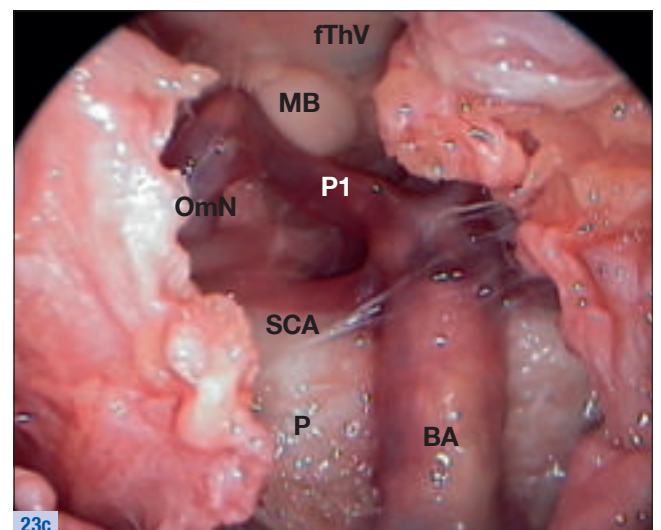
	Anatomical landmarks
AcN	Accessory nerve
AN	Abducent nerve
AICA	Anterior inferior cerebellar artery
ASA	Anterior spinal artery
BA	Basilar artery
C	Clivus
C1r	C1 ventral rootlets
Ch	Chiasm
FN	Facial nerve
fThV	Floor of third ventricle
GN	Glossopharyngeal nerve
HN	Hypoglossal nerve
MB	Mamillary bodies
MO	Medulla oblongata
OmN	Oculomotor nerve
ON	Optic nerve
OT	Optic tract
P	Pons
P1	P1 segment of posterior cerebral artery
PICA	Posterior inferior cerebellar artery
Ps	Pituitary stalk
SCA	Superior cerebellar artery
TrN	Trigeminal nerve
VA	Vertebral artery
VcN	Vestibulocochlear nerve
VN	Vagus nerve



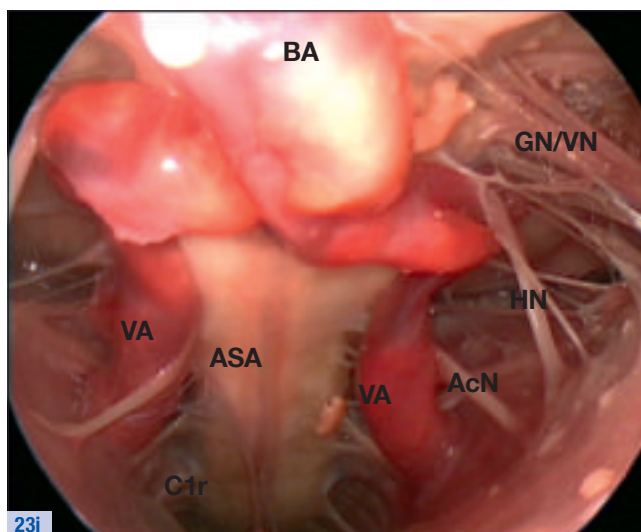
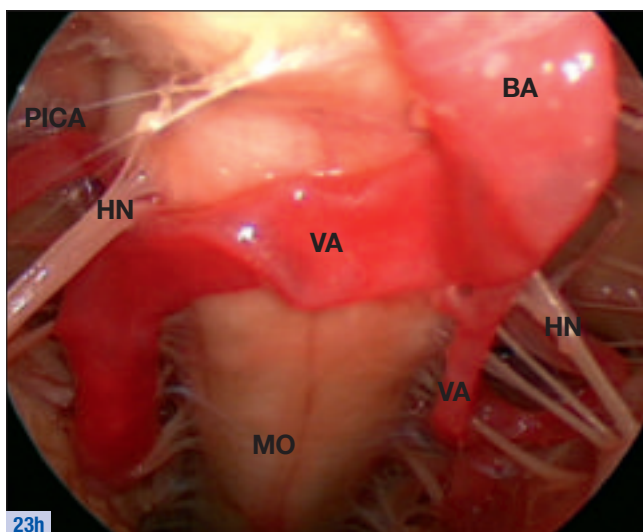
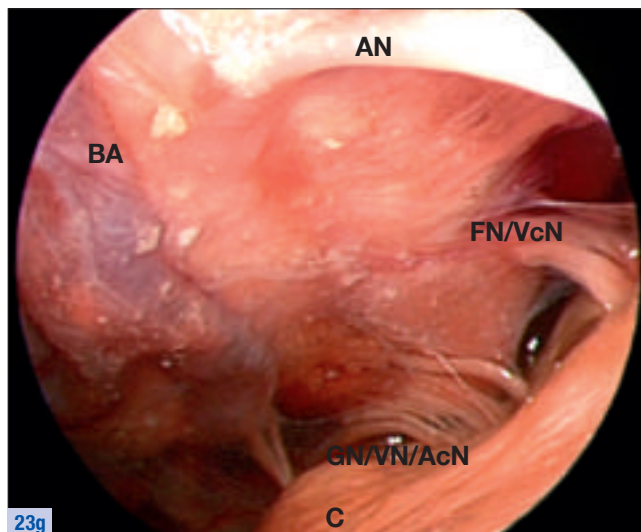
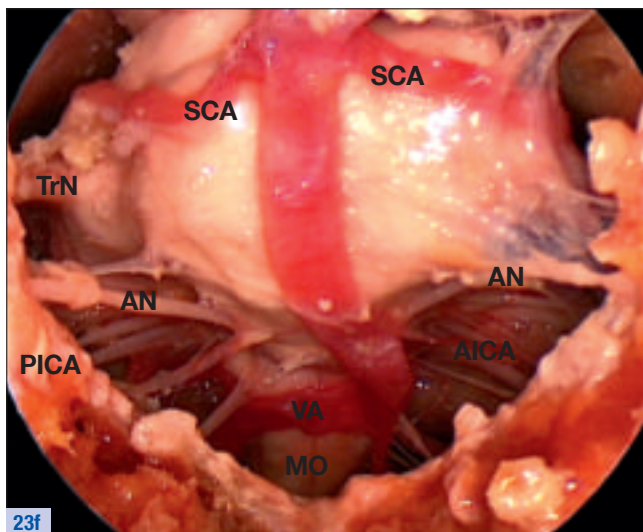
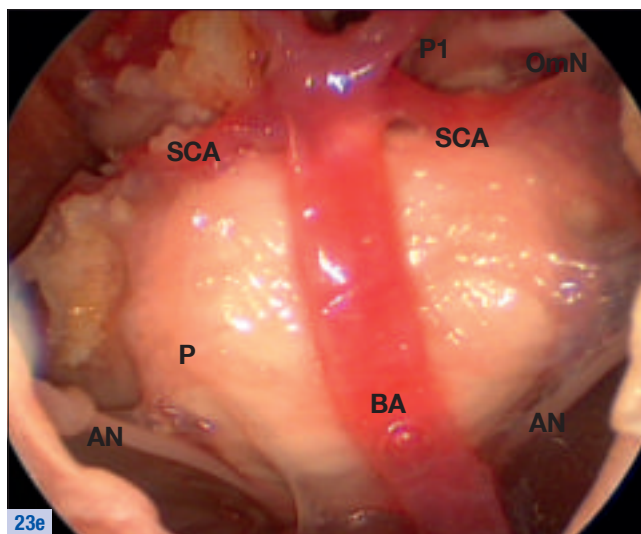
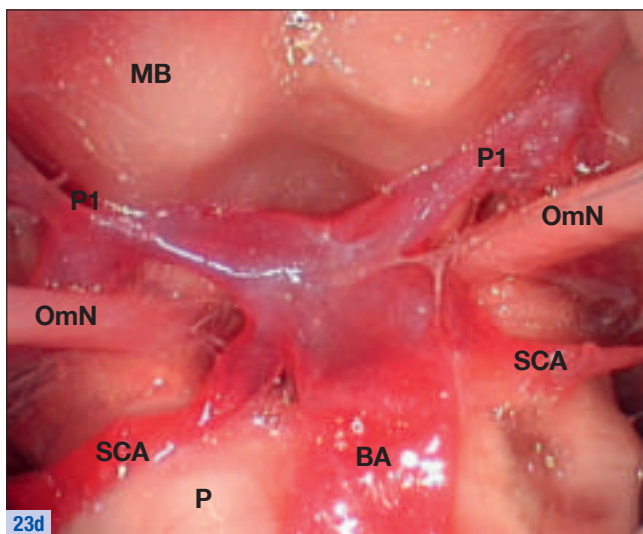
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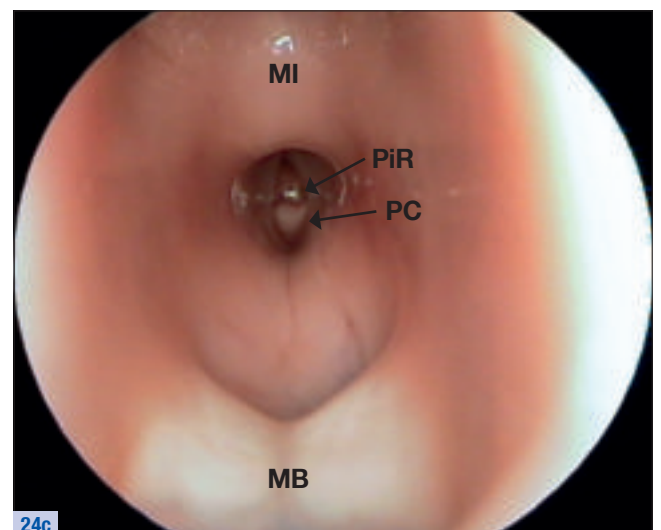
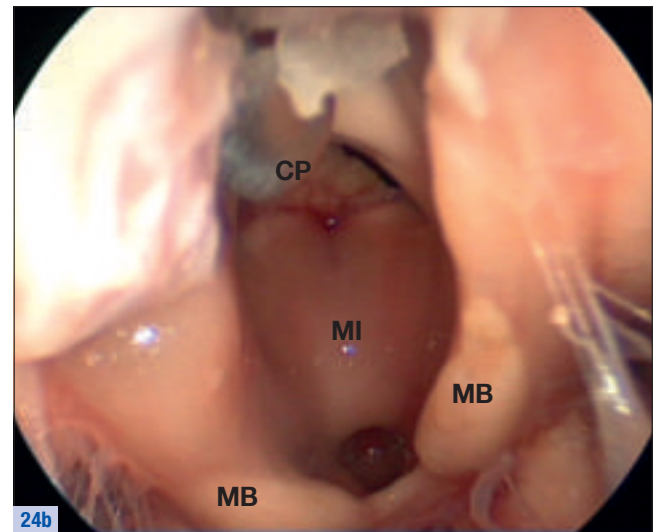
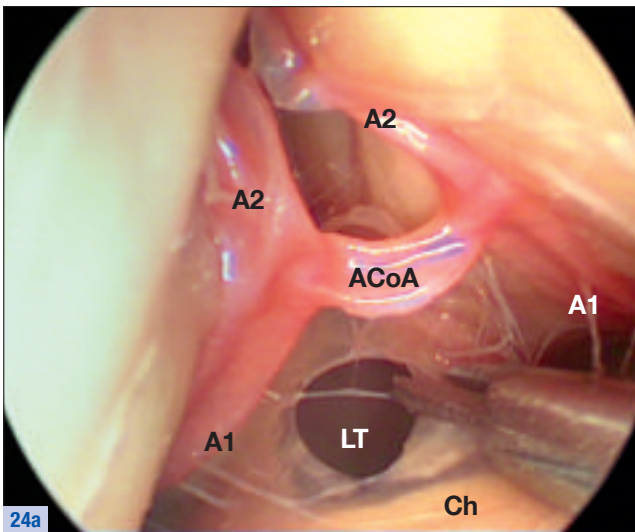


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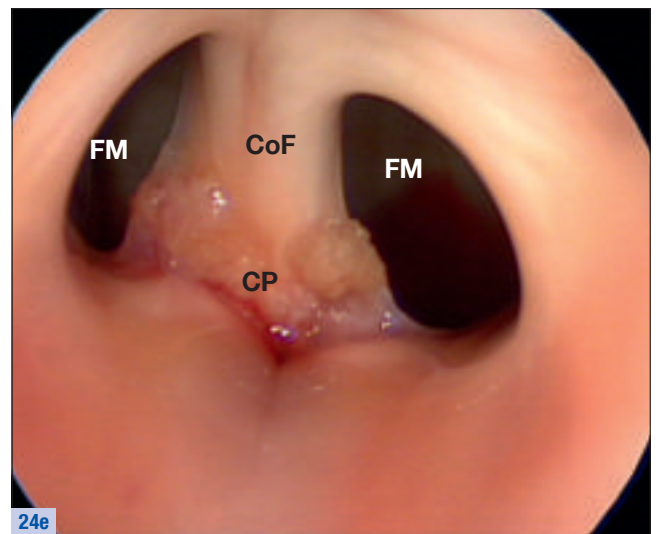
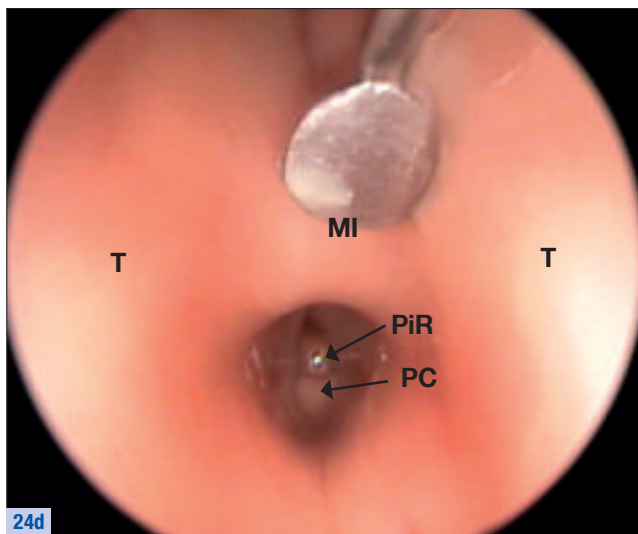


Intraventricular Region

	Anatomical landmarks
A1	A1 segment of anterior cerebral artery
A2	A2 segment of anterior cerebral artery
ACoA	Anterior communicating artery
Ch	Chiasm
CP	Choroid plexus

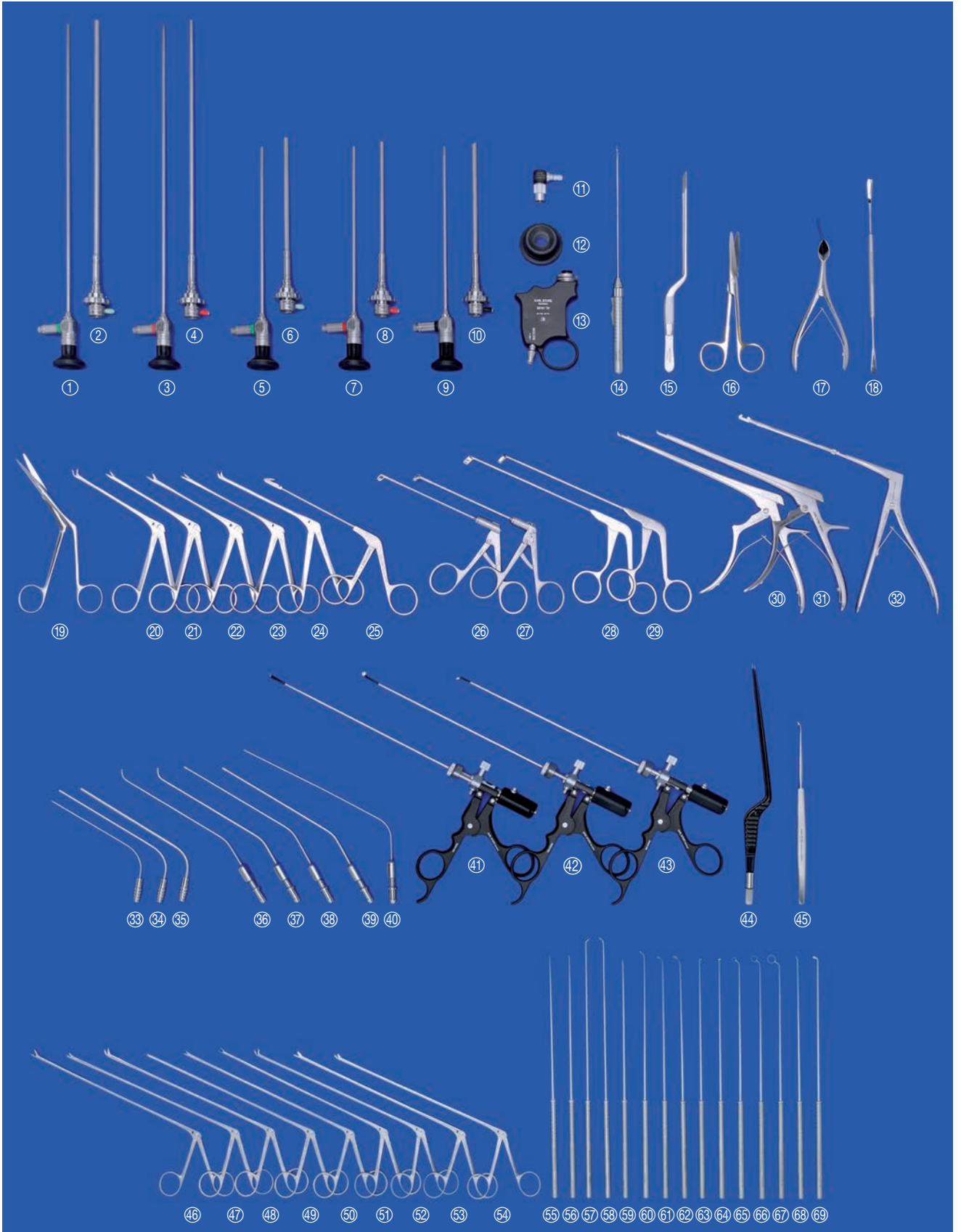


	Anatomical landmarks
CoF	Columnae fornicis
FM	Foramen of Monro
LT	Lamina terminalis
MI	Massa intermedia
MB	Mamillary bodies
PiR	Pineal recess
PC	Posterior commissure
T	Thalamus



Minimally Invasive Endoscopic Pituitary Surgery

BETTAG/SCHÄFER Recommended Set



Minimally Invasive Endoscopic Pituitary Surgery

BETTAG/SCHÄFER Recommended Set

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- ② 28160 TAL **Suction and Irrigation Sheath 0°**, for endoscopic diagnosis and surgery of the paranasal sinuses and anterior skull base, oval, with separate channel for suction and irrigation, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, Cleaning Accessories 28160 TK + TLL and telescope 28164 AA
- ③ 28164 BA **HOPKINS® Forward-Oblique Telescope 30°**, enlarged view, diameter 4 mm, length 30 cm, **autoclavable**, fiber optic light transmission incorporated, color code: red
- ④ 28160 TBL **Suction and Irrigation Sheath 30°**, for endoscopic diagnosis and surgery of the paranasal sinuses and anterior skull base, oval, with separate channel for suction and irrigation, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, Cleaning Accessories 28160 TK – TLL and telescope 28164 BA
- ⑤ 28132 AA **HOPKINS® Straight Forward Telescope 0°**, enlarged view, diameter 4 mm, length 18 cm, **autoclavable**, fiber optic light transmission incorporated, color code: green
- ⑥ 28160 TA **Suction and Irrigation Sheath 0°**, for endoscopic diagnosis and surgery of the paranasal sinuses and anterior skull base, vertical oval, 4.8 mm x 6 mm, with separate channel for suction and irrigation, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, 723630, Cleaning Accessories 28160 TK – TL and Telescope 28132 AA
- ⑦ 28132 BA **HOPKINS® Forward-Oblique Telescope 30°**, enlarged view, diameter 4 mm, length 18 cm, **autoclavable**, fiber optic light transmission incorporated, color code: red
- ⑧ 28160 TB **Suction and Irrigation Sheath 30°**, for endoscopic diagnosis and surgery of the paranasal sinuses and anterior skull base, vertical oval, 4.8 mm x 6 mm, with separate channel for suction and irrigation, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, 723630, Cleaning Accessories 28160 TK – TL and Telescope 28132 BA
- ⑨ 28132 FA **HOPKINS® Forward-Oblique Telescope 45°**, enlarged view, diameter 4 mm, length 18 cm, **autoclavable**, fiber optic light transmission incorporated, color code: black
- ⑩ 28160 TF **Suction and Irrigation Sheath 45°**, for endoscopic diagnosis and surgery of the paranasal sinuses and anterior skull base, vertical oval, 4.8 mm x 6 mm, with separate channel for suction and irrigation, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, 723630, Cleaning Accessories 28160 TK – TL and Telescope 28132 FA
- 28160 TLL **Cleaning tube**, long for sheaths 28160 TAL and 28160 TBL (not illustrated)
- 28160 TK **Cleaning Adaptor**, for irrigation channel of Suction and Irrigation Sheaths 723527 A – F, 28160 TA – TF and 28160 TAL – TBL, LUER-Lock, length 3.5 cm (not illustrated)
- 28160 TL **Cleaning Tube**, for suction/telescope channel of Suction and Irrigation Sheaths 28160 TA – TF, LUER-Lock, length 23 cm (not illustrated)
- ⑪ 495 EW **Light Adaptor**, angled 90°, diameter 4.8 mm, free rotatable to connect with standard telescopes
- ⑫ 533 TVA **Adaptor, autoclavable**, permits telescope changing under sterile conditions
- ⑬ 28161 TT **THUMFART Irrigation and Suction Handle**, with push button valve, including:
THUMFART Handle, with ergonomic ring handle and finger grip plate, for use with Irrigation and Suction Sheaths 723527 A – F, 28160 TA – TF and 28160 TAL – TBL
Push Button Valve (irrigation only active when pressure valve is depressed)
- ⑭ 628001 **Sickle Knife**, pointed, length 19 cm
- ⑮ 426620 **GRÜNWALD Nasal Dressing Forceps**, bayonet-shaped, length 20 cm
- ⑯ 792013 **MAYO Dissecting Scissors**, curved, with tungsten carbide inserts, length 15 cm
- ⑰ 403375 **KILLIAN-STRUYCKEN Nasal Speculum**, with set screw, blade length 75 mm, length 15 cm
- ⑱ 488074 **FREER Elevator**, double-ended, sharp and blunt, special matt finish, length 20 cm
- ⑲ 449002 **HEYMANN Nasal Scissors**, medium, (standard model), working length 9.5 cm
- ⑳ 456501 **BLAKESLEY-WILDE Nasal Forceps**, 45° upturned, size 1, working length 11 cm
- ㉑ 456000 **BLAKESLEY Nasal Forceps**, straight, size 0, working length 11 cm
- ㉒ 456001 **Same**, size 1
- ㉓ 456101 **GRÜNWALD-HENKE Nasal Forceps**, straight, through-cutting, tissue-sparing, BLAKESLEY shape, width 3.5 mm, working length 11 cm
- ㉔ 456121 **Same**, 45° upturned
- ㉕ 459010 **STAMMBERGER RHINOFORCE® II Antrum Punch**, upside backward cutting, working length 10 cm
- ㉖ 459051 **STAMMBERGER Antrum Punch**, right side downward and forward cutting, working length 10 cm
- ㉗ 459052 **Same**, left side downward and forward cutting
- ㉘ 459151 **STAMMBERGER SilCut® Antrum Punch**, extremely powerful resection, patented uniform force transmission for gently controlled cutting, new ergonomic handle design, right side downward and forward cutting, working length 10 cm
- ㉙ 459152 **Same**, left side downward and forward cutting
- ⑳ 28164 MKA **Punch**, upbiting 60° forward, size 1 mm, working length 17 cm
- ㉑ 28164 MKB **Same**, size 2 mm

It is recommended to check the suitability of the product for the intended procedure prior to use.

Minimally Invasive Endoscopic Pituitary Surgery

BETTAG/SCHÄFER Recommended Set

- ③② 648500 HAJEK-KOFLER **Sphenoid Punch**, not through-cutting, reversible, size 3.2 x 4 mm, working length 17 cm
- ③③ 203720 **Suction Tube**, cylindrical, LUER, outer diameter 2 mm, working length 9 cm
- ③④ 203730 **Same**, outer diameter 3 mm, working length 11 cm
- ③⑤ 203740 **Same**, outer diameter 4 mm, working length 11 cm
- ③⑥ 662882 FRANK-PASQUINI **Suction Tube**, angular, tip curved upwards, ball end, with grip plate and cut-off hole, LUER, diameter 2.4 mm, working length 13 cm
- ③⑦ 662885 **Same**, diameter 3 mm
- ③⑧ 662825 FRANK-PASQUINI **Suction Tube**, angular, tip straight, with grip plate and cut-off hole, diameter 2.5 mm, working length 12 cm
- ③⑨ 662830 **Same**, diameter 3 mm
- ④⑩ 649180 B **Suction Tube**, malleable, with elongated cut-off hole and stylet, LUER, 6 Fr., working length 15 cm
- ④① 28164 BDD **TAKE-APART® Bipolar Forceps**, width 2 mm, distally angled 45°, horizontal closing, outer diameter 3.4 mm, working length 20 cm, including:
Bipolar Ring Handle
Outer Sheath
Inner Sheath
Forceps Insert
- ④② 28164 BDK **TAKE-APART® Bipolar Forceps**, width 4 mm, distally angled 45°, horizontal closing, size 3.4 mm, working length 20 cm, including:
Handle
Outer Tube
Inner Tube
Bipolar Insert
- ④③ 28164 BDM **TAKE-APART® Bipolar Forceps**, with fine jaws, width 1 mm, distally angled 45°, horizontal closing, outer diameter 3.4 mm, working length 20 cm, including:
Bipolar Ring Handle
Outer Sheath
Inner Sheath
Forceps Insert
- ④④ 844523 **Bipolar Coagulating Forceps**, insulated, bayonet-shaped, tip 0.7 mm, length 23 cm, for use with Bipolar High Frequency Cords 847000 E or 847000 A/F/M/N/S/T/V
- ④⑤ 28164 KK de DIVITIIS-CAPPABIANCA **Scalpel**, with retractable blade, including:
Handle
Outer Sheath
Micro Knife, sickle-shaped
- ④⑥ 663239 **Forceps**, straight, not through-cutting, with oval, fenestrated cupped jaws, width 2.5 mm, working length 18 cm
- ④⑦ 663231 **Forceps**, straight, with round cupped jaws, diameter 2.5 mm, working length 18 cm
- ④⑧ 663237 **Same**, 45° upturned
- ④⑨ 663301 **Scissors**, straight, delicate, working length 18 cm
- ⑤⑩ 663304 **Same**, curved to right, extra delicate
- ⑤① 663305 **Same**, curved to left, extra delicate
- ⑤② 663307 **Same**, 45° curved upwards, extra delicate
- ⑤③ 28164 GS **Miniature Forceps**, through-cutting, with fine flat jaws, bite 1 mm, straight, working length 18 cm
- ⑤④ 28164 GU **Same**, curved up
- ⑤⑤ 28164 KA **Curette**, round spoon, tip slightly angled, size 1 mm, with round handle, length 25 cm
- ⑤⑥ 28164 KF **Same**, tip highly angled, size 2 mm
- ⑤⑦ 28164 ER **Micro Raspatory**, single curved to right, width 2 mm, length 27 cm
- ⑤⑧ 28164 EL **Same**, single curved to left
- ⑤⑨ 28164 DS **Elevator**, sharp, tip angled 15°, slightly curved spatula, with round handle, size 2 mm, length 25 cm

Minimally Invasive Endoscopic Pituitary Surgery

BETTAG/SCHÄFER Recommended Set

- ⑥0 28164 RN CAPPABIANCA-de DIVITIIS **Ring Curette**, with round wire, inner diameter 3 mm, tip angled 45°, with round handle, length 25 cm
- ⑥1 28164 RO **Same**, inner diameter 5 mm
- ⑥2 28164 RP **Same**, inner diameter 7 mm
- ⑥3 28164 RI CAPPABIANCA-de DIVITIIS **Ring Curette**, with round wire, inner diameter 3 mm, tip angled 90°, with round handle, length 25 cm
- ⑥4 28164 RG **Same**, inner diameter 5 mm
- ⑥5 28164 RB CAPPABIANCA-de DIVITIIS **Ring Curette**, with round wire, inner diameter 3 mm, laterally curved sheath end, with round handle, length 25 cm
- ⑥6 28164 RA **Same**, inner diameter 5 mm
- ⑥7 28164 RC **Same**, inner diameter 7 mm
- ⑥8 28164 DA **Dissector**, sharp, tip angled 45°, round spatula, with round handle, size 2 mm, length 25 cm
- ⑥9 28164 DB **Same**, size 3 mm

Optional Entrance Instruments (not illustrated)

- 7229 AA **HOPKINS® Straight Forward Telescope 0°**, diameter 2.7 mm, length 18 cm, **autoclavable**
- 723527 A **Irrigation and Suction Sheath 0°**, vertical oval, 3.5 x 4.7 mm, separate irrigation and suction channels
- 7229 BA **HOPKINS® Forward-Oblique Telescope 30°**, diameter 2.7 mm, length 18 cm, **autoclavable**
- 723527 B **Irrigation and Suction Sheath 30°**, vertical oval, 3.5 x 4.7 mm, separate irrigation and suction channels
- 7229 FA **HOPKINS® Forward-Oblique Telescope 45°**, diameter 2.7 mm, length 18 cm, **autoclavable**
- 723527 F **Irrigation and Suction Sheath 45°**, vertical oval, 3.5 x 4.7 mm, separate irrigation and suction channels

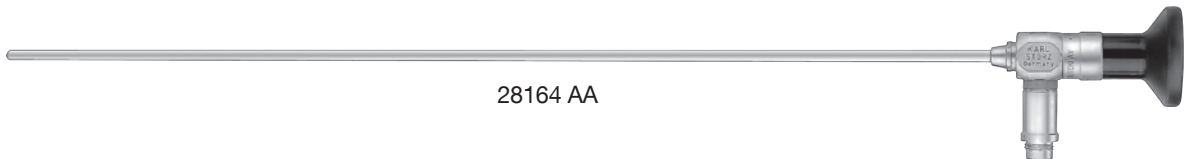
Recommended Containers for Sterilization

- Telescopes: 39301 A (3x)
- Telescopes long: 39301 B
- Instruments: 39360 AK

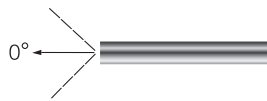
HOPKINS® Telescopes

for Minimally Invasive Endoscopic Pituitary Surgery

diameter 4 mm, length 30 cm

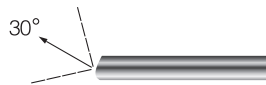


28164 AA



28164 AA

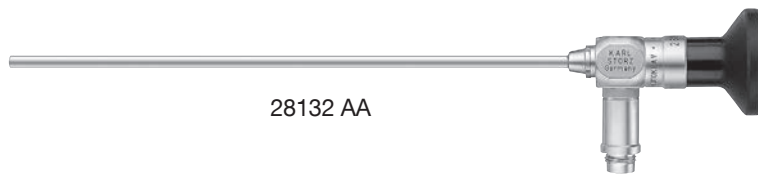
HOPKINS® Straight Forward Telescope 0°, enlarged view, diameter 4 mm, length 30 cm, **autoclavable**, fiber optic light transmission incorporated, color code: green



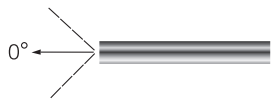
28164 BA

HOPKINS® Forward-Oblique Telescope 30°, enlarged view, diameter 4 mm, length 30 cm, **autoclavable**, fiber optic light transmission incorporated, color code: red

diameter 4 mm, length 18 cm



28132 AA



28132 AA

HOPKINS® Straight Forward Telescope 0°, enlarged view, diameter 4 mm, length 18 cm, **autoclavable**, fiber optic light transmission incorporated, color code: green



28132 BA

HOPKINS® Forward-Oblique Telescope 30°, enlarged view, diameter 4 mm, length 18 cm, **autoclavable**, fiber optic light transmission incorporated, color code: red



28132 FA

HOPKINS® Forward-Oblique Telescope 45°, enlarged view, diameter 4 mm, length 18 cm, **autoclavable**, fiber optic light transmission incorporated, color code: black



495 EW

Light Adaptor, angled 90°, diameter 4.8 mm, free rotatable to connect with standard telescopes



533 TVA

Adaptor, autoclavable, permits telescope changing under sterile conditions

Suction and Irrigation Sheaths for Minimally Invasive Endoscopic Pituitary Surgery



28160 TAL

28160 TAL **Suction and Irrigation Sheath 0°**, for endoscopic diagnosis and surgery of the paranasal sinuses and anterior skull base, oval, with separate channel for suction and irrigation, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, Cleaning Accessories 28160 TK + TLL and telescope 28164 AA



28160 TBL

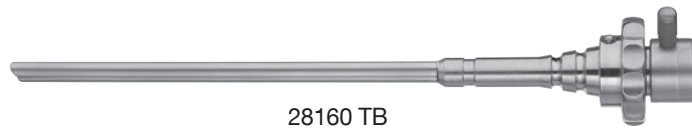
28160 TBL **Suction and Irrigation Sheath 30°**, for endoscopic diagnosis and surgery of the paranasal sinuses and anterior skull base, oval, with separate channel for suction and irrigation, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, Cleaning Accessories 28160 TK + TLL and telescope 28164 BA

Suction and Irrigation Sheaths for Minimally Invasive Endoscopic Pituitary Surgery



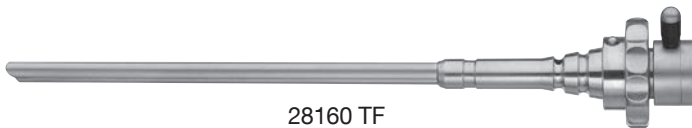
28160 TA

- 28160 TA **Suction and Irrigation Sheath 0°**, for endoscopic diagnosis and surgery of the paranasal sinuses and anterior skull base, vertical oval, 4.8 mm x 6 mm, with separate channel for suction and irrigation, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, 723630, Cleaning Accessories 28160 TK – TL and Telescope 28132 AA



28160 TB

- 28160 TB **Suction and Irrigation Sheath 30°**, for endoscopic diagnosis and surgery of the paranasal sinuses and anterior skull base, vertical oval, 4.8 mm x 6 mm, with separate channel for suction and irrigation, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, 723630, Cleaning Accessories 28160 TK – TL and Telescope 28132 BA



28160 TF

- 28160 TF **Suction and Irrigation Sheath 45°**, for endoscopic diagnosis and surgery of the paranasal sinuses and anterior skull base, vertical oval, 4.8 mm x 6 mm, with separate channel for suction and irrigation, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, 723630, Cleaning Accessories 28160 TK – TL and Telescope 28132 FA

- 28160 TLL **Cleaning tube**, long for sheaths 28160 TAL and 28160 TBL
 28160 TK **Cleaning Adaptor**, for irrigation channel of Suction and Irrigation Sheaths 723527 A – F and 28160 TA – TF, LUER-Lock, length 3.5 cm
 28160 TL **Cleaning Tube**, for suction/telescope channel of Suction and Irrigation Sheaths 28160 TA – TF, LUER-Lock, length 23 cm

THUMFART Irrigation and Suction Handle



28161 TT

- 28161 TT THUMFART **Irrigation and Suction Handle**, with push button valve, including:
THUMFART **Handle**, with ergonomic ring handle and finger grip plate, for use with Irrigation and Suction Sheaths 723527 A – F, 28160 TA – TF and 28160 TAL – TBL
Push Button Valve
(irrigation only active when pressure valve is depressed)

Instruments



- 628001 **Sickle Knife**, pointed, length 19 cm
- 426620 **GRÜNWALD Nasal Dressing Forceps**, bayonet-shaped, length 20 cm
- 792013 **MAYO Dissecting Scissors**, curved, with tungsten carbide inserts, length 15 cm
- 403375 **KILLIAN-STRUYCKEN Nasal Speculum**, with set screw, blade length 75 mm, length 15 cm

- 488074 **FREER Elevator**, double-ended, sharp and blunt, special matt finish, length 20 cm
- 449002 **HEYMANN Nasal Scissors**, medium, (standard model), working length 9.5 cm

Instruments



456501

BLAKESLEY-WILDE Nasal Forceps,
45° upturned, size 1, working length 11 cm



456000

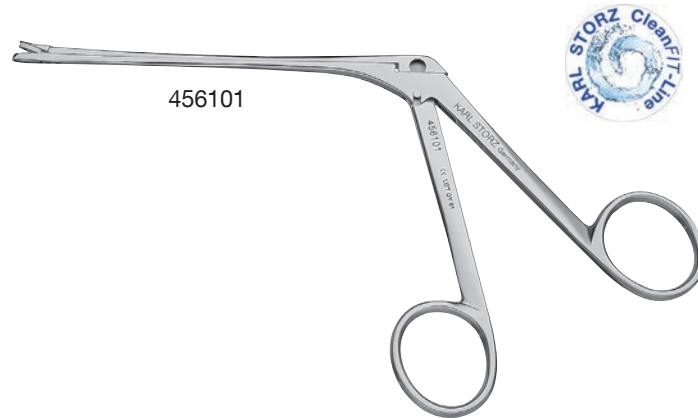
BLAKESLEY Nasal Forceps,
straight, size 0, working length 11 cm



456001

Same, size 1

Instruments



456101



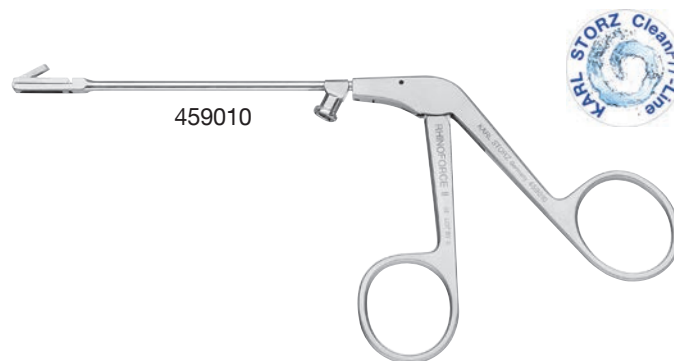
456101

GRÜNWALD-HENKE **Nasal Forceps**, straight, through-cutting, tissue-sparing, BLAKESLEY shape, width 3.5 mm, working length 11 cm



456121

Same, 45° upturned



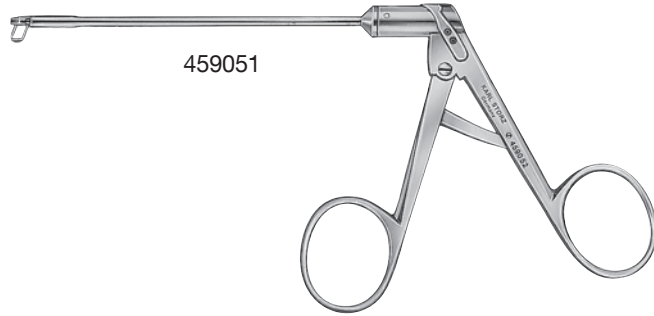
459010



459010

STAMMBERGER **RHINOFORCE® II Antrum Punch**, upside backward cutting, with cleaning connector, working length 10 cm

Instruments



459051

STAMMBERGER Antrum Punch,
right side downward and forward cutting,
working length 10 cm



459052

Same, left side downward and forward cutting



4459151

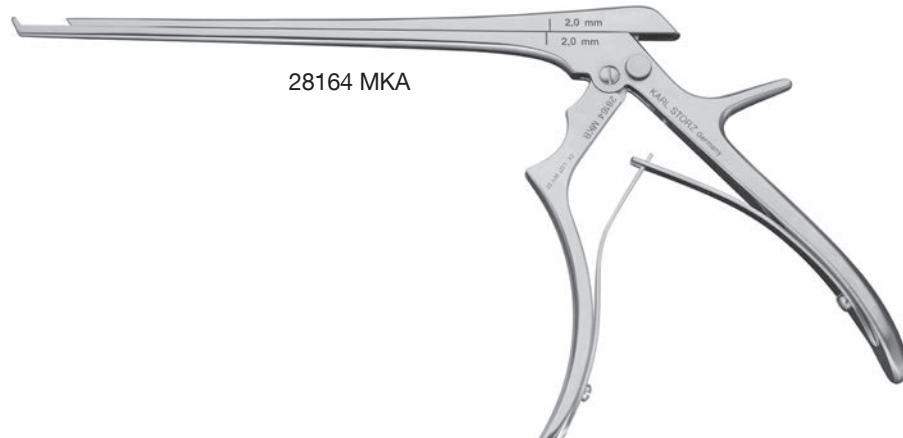
STAMMBERGER SilCut® Antrum Punch,
extremely powerful resection, patented uniform
force transmission for gently controlled cutting,
new ergonomic handle design,
right side downward and forward cutting,
with cleaning connector, working length 10 cm



4459152

Same, left side downward and forward cutting

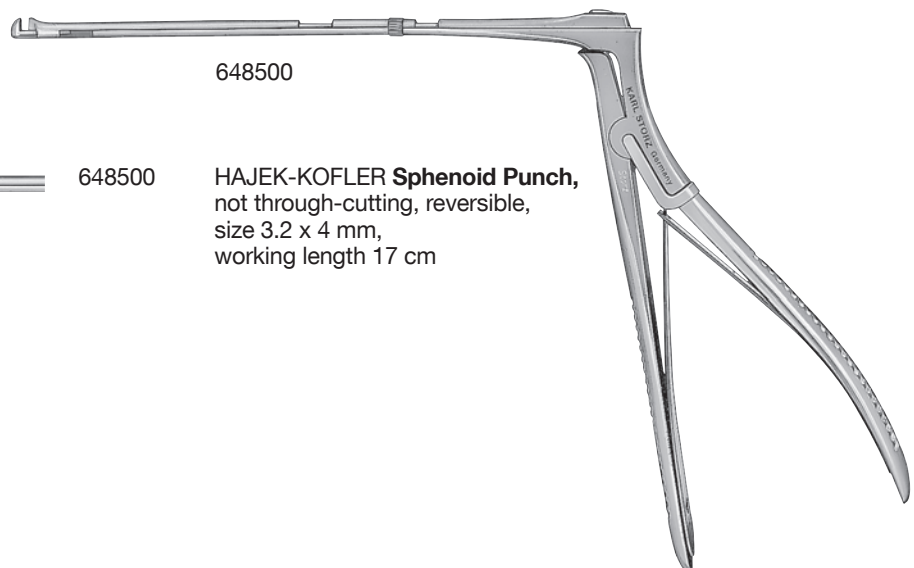
Instruments




28164 MKA

◦  28164 MKA **Punch**, upbited 60° forward, size 1 mm, working length 17 cm

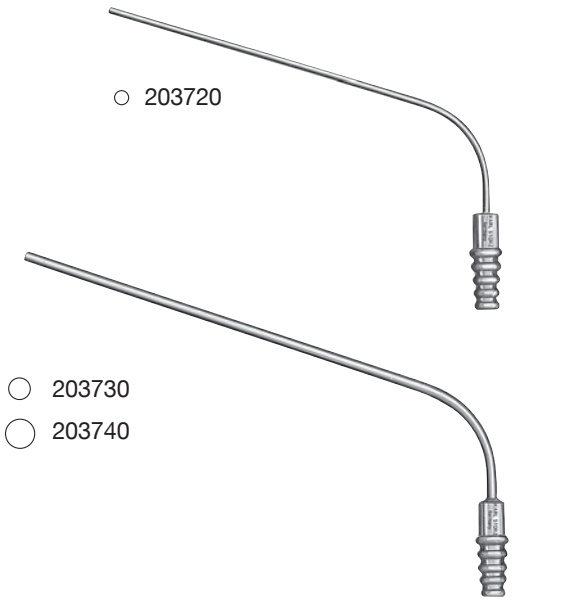
◦  28164 MKB **Same**, size 2 mm



648500

 648500 **HAJEK-KOFLER Sphenoid Punch**, not through-cutting, reversible, size 3.2 x 4 mm, working length 17 cm

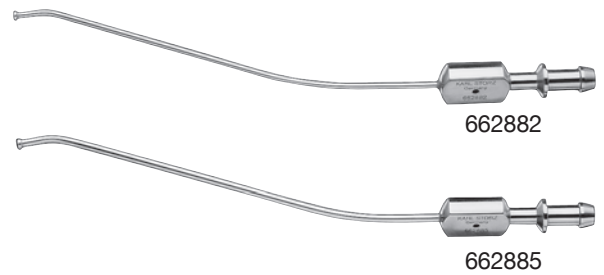
Instruments



○ 203720

○ 203730

○ 203740



662882

662885



662825

662830

- 203720 **Suction Tube**, cylindrical, LUER, outer diameter 2 mm, working length 9 cm
- 203730 **Same**, outer diameter 3 mm, working length 11 cm
- 203740 **Same**, outer diameter 4 mm, working length 11 cm

- 662882 **FRANK-PASQUINI Suction Tube**, angular, tip curved upwards, ball end, with grip plate and cut-off hole, LUER, diameter 2.4 mm, working length 13 cm
- 662885 **Same**, diameter 3 mm
- 662825 **FRANK-PASQUINI Suction Tube**, angular, tip straight, with grip plate and cut-off hole, diameter 2.5 mm, working length 12 cm
- 662830 **Same**, diameter 3 mm



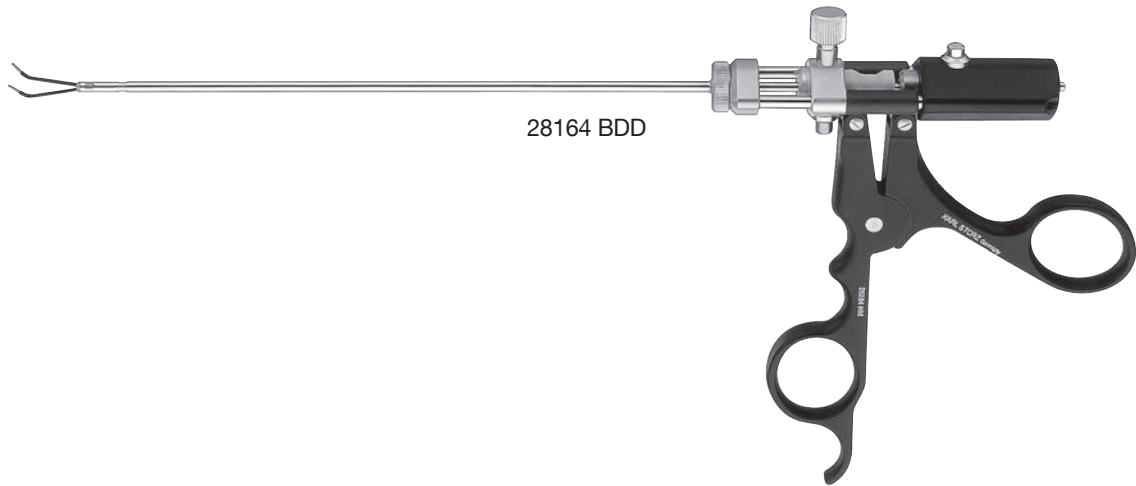
○ 649180 B

- 649180 B **Suction Tube**, malleable, with elongated cut-off hole and stylet, LUER, 6 Fr., working length 15 cm

TAKE-APART® Bipolar Forceps



For use with Bipolar High Frequency Cords 26176 LE/LM/L/LA/LV



28164 BDD



28164 BDD **TAKE-APART® Bipolar Forceps**,
width 2 mm, distally angled 45°,
horizontal closing, outer diameter 3.4 mm,
working length 20 cm,
including:
Bipolar Ring Handle
Outer Sheath
Inner Sheath
Forceps Insert



28164 BDK **TAKE-APART® Bipolar Forceps**,
width 4 mm, distally angled 45°,
horizontal closing, size 3.4 mm,
working length 20 cm,
including:
Handle
Outer Tube
Inner Tube
Bipolar Insert



28164 BDM **TAKE-APART® Bipolar Forceps**,
with fine jaws, width 1 mm, distally angled 45°,
horizontal closing, outer diameter 3.4 mm,
working length 20 cm,
including:
Bipolar Ring Handle
Outer Sheath
Inner Sheath
Forceps Insert

Instruments



844523

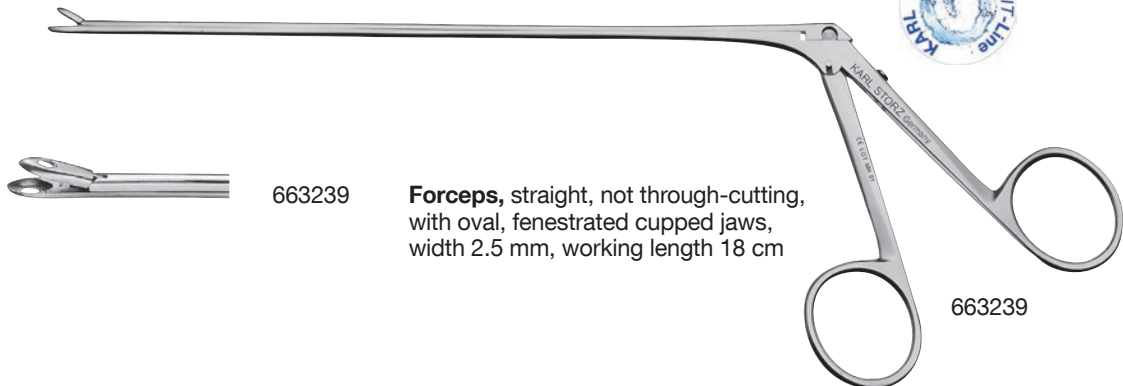
844523 **Bipolar Coagulating Forceps**, insulated, bayonet-shaped, tip 0.7 mm, length 23 cm, for use with Bipolar High Frequency Cords 847000 E or 847000 A/F/M/N/S/T/V



28164 KK



28164 KK de DIVITIIS-CAPPABIANCA **Scalpel**, with retractable blade, including:
Handle
Outer Sheath
Micro Knife, sickle-shaped

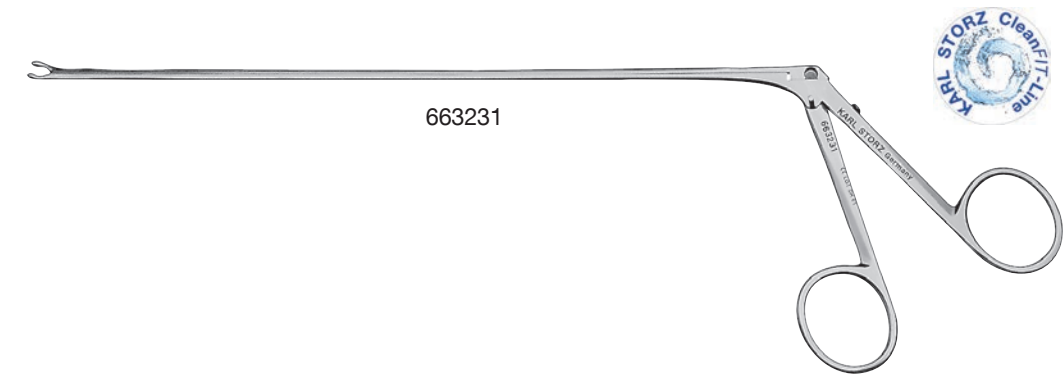


663239

Forceps, straight, not through-cutting, with oval, fenestrated cupped jaws, width 2.5 mm, working length 18 cm

663239

Instruments



663231



663231

Forceps, straight, with round cupped jaws, diameter 2.5 mm, working length 18 cm

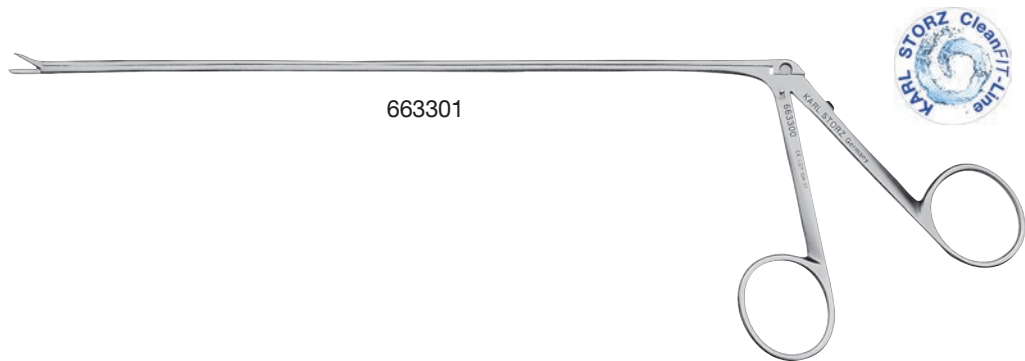
663237

Same, 45° upturned

28164 GS

Miniature Forceps, through-cutting, with fine flat jaws, bite 1 mm, straight, working length 18 cm

28164 GU

Same, curved up

663301



663301

Scissors, straight, delicate, working length 18 cm

663304

Same, curved to right, extra delicate

663305

Same, curved to left, extra delicate

663307

Same 45° curved upwards, extra delicate

Instruments



28164 KA



28164 KA **Curette**, round spoon, tip slightly angled, size 1 mm, with round handle, length 25 cm



28164 KF **Same**, tip highly angled, size 2 mm



28164 EL



28164 EL **Micro Raspatory**, single curved to left, width 2 mm, length 27 cm



28164 ER **Same**, single curved to right

Instruments



28164 DS



28164 DS **Elevator**, sharp, tip angled 15°, slightly curved spatula, with round handle, size 2 mm, length 25 cm



28164 DA **Dissector**, sharp, tip angled 45°, round spatula, with round handle, size 2 mm, length 25 cm



28164 DB **Same**, size 3 mm



28164 RP



28164 RN CAPPABIANCA-de DIVITIIS **Ring Curette**, with round wire, inner diameter 3 mm, tip angled 45°, with round handle, length 25 cm



28164 RO **Same**, inner diameter 5 mm



28164 RP **Same**, inner diameter 7 mm



28164 RI CAPPABIANCA-de DIVITIIS **Ring Curette**, with round wire, inner diameter 3 mm, tip angled 90°, with round handle, length 25 cm

28164 RG **Same**, inner diameter 5 mm

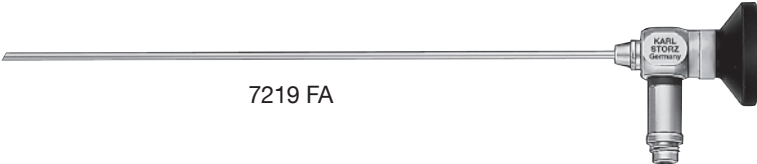





28164 RB CAPPABIANCA-de DIVITIIS **Ring Curette**, with round wire, inner diameter 3 mm, laterally curved sheath end, with round handle, length 25 cm

28164 RA **Same**, inner diameter 5 mm

28164 RC **Same**, inner diameter 7 mm

HOPKINS® Telescopes

		7219 FA	
	7229 AA	HOPKINS® Straight Forward Telescope 0° , diameter 2.7 mm, length 18 cm, autoclavable , fiber optic light transmission incorporated, color code: green	
	723527 A	Irrigation and Suction Sheath 0° , vertical oval, 3.5 x 4.7 mm, separate irrigation and suction channels, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, 723620 – 723630, Cleaning Accessories 28160 TK, 723527 L, 723540 K and Telescope 7219 AA	
	7229 BA	HOPKINS® Forward-Oblique Telescope 30° , diameter 2.7 mm, length 18 cm, autoclavable , fiber optic light transmission incorporated, color code: red	
	723527 B	Irrigation and Suction Sheath 30° , vertical oval, 3.5 x 4.7 mm, separate irrigation and suction channels, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, 723620 – 723630, Cleaning Accessories 28160 TK, 723527 L, 723540 K and Telescope 7219 BA	
	7229 FA	HOPKINS® Forward-Oblique Telescope 45° , diameter 2.7 mm, length 18 cm, autoclavable , fiber optic light transmission incorporated, color code: black	
	723527 F	Irrigation and Suction Sheath 45° , vertical oval, 3.5 x 4.7 mm, separate irrigation and suction channels, for use with Irrigation and Suction Handles 28161 TD/TT/JD/JT, 723620 – 723630, Cleaning Accessories 28160 TK, 723527 L, 723540 K and Telescope 7219 FA	

Plastic Container for Sterilizing and Storage of Telescopes



39301 A

- 39301 A Plastic Container for Sterilizing and Storage of Telescopes**, perforated, with transparent lid, with silicone telescope holder, external dimensions (w x d x h): 321 x 90 x 45 mm, for 4 mm Arthroscopy Telescopes and similar,
including:
Bottom Part
Lid
Silicone Telescope Holder

- 39301 B Plastic Container for Sterilizing and Storage of Telescopes**, perforated, with transparent lid, with silicone telescope holder, external dimensions (w x d x h): 446 x 90 x 45 mm, for 4 mm Cystoscopy Telescopes or 10 mm Laparoscopy Telescopes and similar
including:
Bottom Part
Lid
Silicone Telescope Holder
Silicone Telescope Holder

Plastic Container for Sterilizing and Storage



39360 AK

- 39360 AK Plastic Container for Sterilizing and Storage of Variable Instrument Sets**, perforated, with transparent lid, with silicone mat, two-level storage, (1 additional insert), external dimensions (w x d x h): 525 x 240 x 100 mm. The plastic containers may be used for sterilization with steam, gas and plasma,
including:
2x **Snap-in Clip**,
package of 12
2x **Silicone Tie-Downs**,
package of 12
Tool

EndoCAMeleon® NEURO HOPKINS® Telescope

The ENDOCAMELEON® is the newest member of the HOPKINS® family of rod-lens telescopes – and the most versatile.

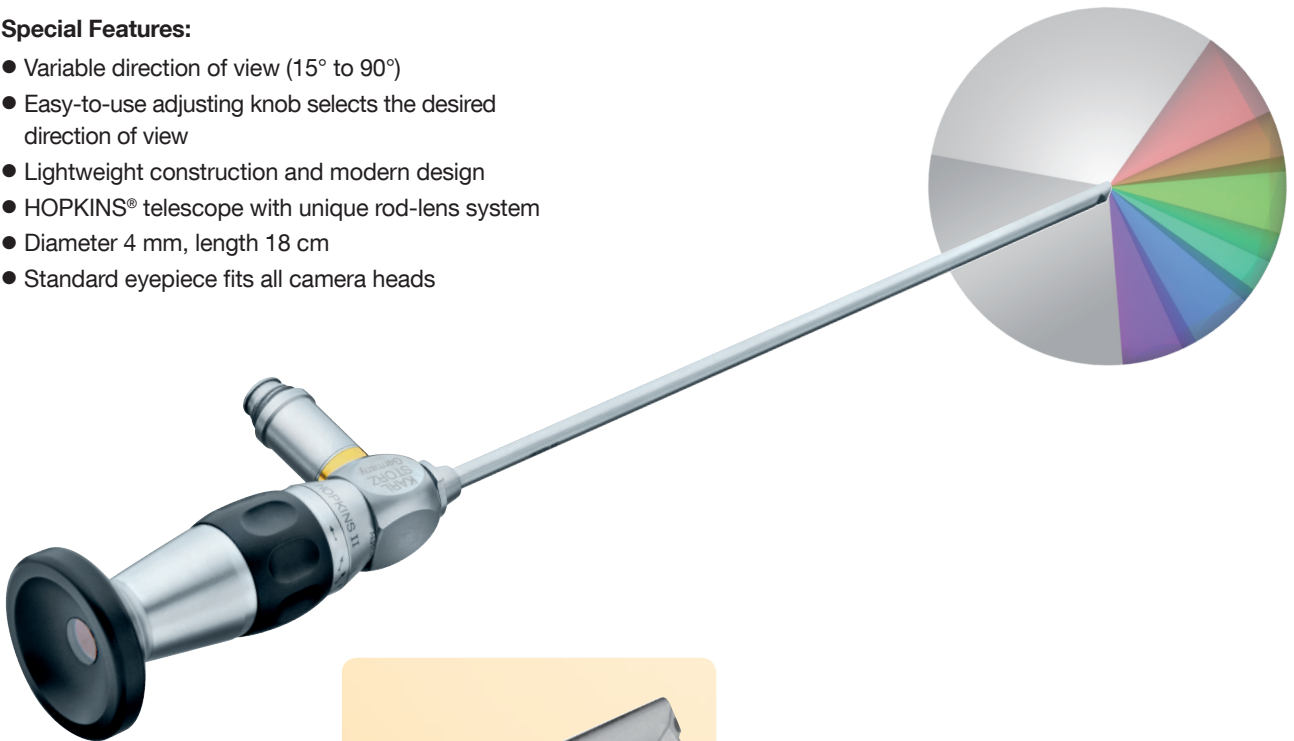
With a simple turn of the adjusting knob, ENDOCAMELEON® enables the user to select the direction of view between 15° and 90°. Consequently, the surgeon can quickly and easily select the desired direction of view for optimal orientation and control.

The ENDOCAMELEON® from KARL STORZ brings a new quality to endoscopy in the OR as it often enhances orientation during an operation without the time-consuming changeover of telescopes, thereby ensuring safe and smooth surgery.

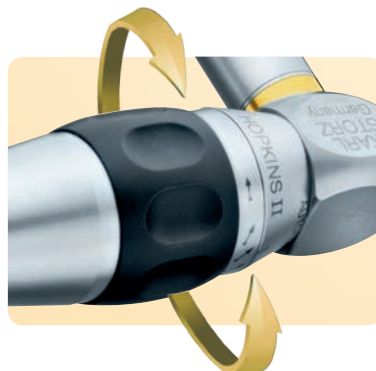
The ENDOCAMELEON® combines the user comfort of the proven HOPKINS® endoscopes with unprecedented versatility – in the proven KARL STORZ high quality.

Special Features:

- Variable direction of view (15° to 90°)
- Easy-to-use adjusting knob selects the desired direction of view
- Lightweight construction and modern design
- HOPKINS® telescope with unique rod-lens system
- Diameter 4 mm, length 18 cm
- Standard eyepiece fits all camera heads



The familiar ergonomics and handling of conventional telescopes is enhanced with the additional convenience of a variable direction of view



The direction of view is adjusted by a mere turn of the adjusting knob at the proximal end of the ENDOCAMELEON®

Telescope

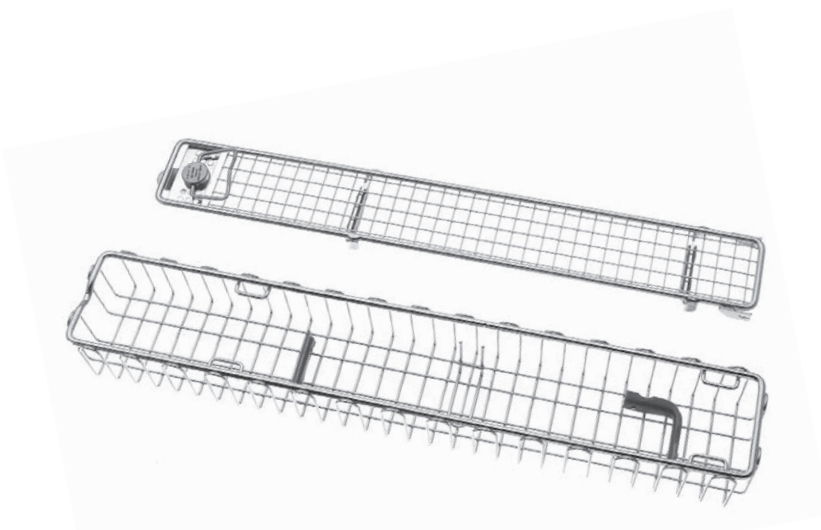


- 28132 AE **ENDOCAMELEON® HOPKINS® Telescope**, diameter 4 mm, length 18 cm, **autoclavable**, variable direction of view from 15° to 90°, adjustment knob for selecting the desired direction of view, fiber optic light transmission incorporated, color code: gold



- 7230 AES **Irrigation and Suction Sheath**, outer diameter 4.8 x 6 mm, working length 14 cm, for use with ENDOCAMELEON® ENT HOPKINS® Telescope 7230 AE and KARL STORZ lens irrigation system CLEARVISION® II

Accessories



- 39501 A1 **Wire Tray for Cleaning, Sterilization and Storage** of one rigid endoscope, including holder for light post adaptors, silicone telescope holders and lid, external dimensions (w x d x h): 290 x 60 x 52 mm, for rigid endoscopes up to diameter 5 mm and working length 20 cm

UNIDRIVE® S III NEURO SCB ^{NEW}

Special Features



UNIDRIVE® S III NEURO SCB

Special Features:

Straightforward function selection and optimized user control via touch screen

Choice of user languages

Operating elements are single and clear to read due to color display

One unit – six functions:

Neurosurgery:

- Craniotomes
- Perforators
- High-Speed Handpieces 100,000 rpm
- High-Speed Handpieces 60,000 rpm

ENT:

- Shaver system for surgery of the paranasal sinuses and anterior skull base
 - INTRA Drills
 - Sinus Shavers
 - Micro Saws
 - STAMMBERGER-SACHSE Intranasal Drill
 - Dermatomes
-

Two motor outputs:

Two motor outputs enable two motors to be connected simultaneously: for example, a high-speed handpiece and a shaver handpiece may be connected in parallel

Safe work due to rapid blade when the pedal is released

Integrated irrigation and coolant pump

Absolutely homogeneous, micro-processor controlled irrigation rate throughout the entire irrigation range. Quick and easy connection of the tubing set.

Easy program selection via automated motor recognition

Continuously variable revolution range

Maximum number of revolutions and motor torque:

Microprocessor-controlled motor rotation speed. Therefore the preselected parameters are maintained throughout the drilling procedure.

Maximum number of revolutions can be preset

With connection possibilities to the KARL STORZ Communication Bus (KARL STORZ-SCB)

Irrigator rod included

UNIDRIVE® S III NEURO SCB ^{NEW}

Recommended Standard Set Configurations



40 7017 01-1 UNIDRIVE® S III NEURO SCB, motor control unit with color display, touch screen, two motor outputs, integrated irrigation pump and integrated SCB module, power supply 100 – 240 VAC, 50/60 Hz including:

Mains Cord

Irrigator Rod

Two-Pedal Footswitch, two-stage, with proportional function

Silicone Tubing Set, for irrigation, sterilizable

Clip Set, for use with tubing set


SCB Connecting Cable, length 100 cm

Single Use Tubing Set*, sterile, package of 3

Specifications:

Touch Screen	6.4"/300 cd/m ²
Available languages:	English, French, German, Spanish, Italian, Portuguese, Greek, Turkish, Polish, Russian
Power supply	100–240 VAC, 50/60 Hz

Dimensions w x h x d	300 x 165 x 265 mm
Weight	5.2 kg
Certified to:	IEC 601-1, CE acc. to MDD

*  mtp medical technical promotion gmbh,
Take-Off GewerbePark 46, 78579 Neuhausen ob Eck, Germany

UNIDRIVE® S III NEURO SCB ^{NEW}

High-Speed Micro Motor

Special Features:

- Self-cooling and brushless high-speed micro motor
- Smallest possible dimensions
- Autoclavable
- Reprocessable in a cleaning machine
- Maximum torque 6 Ncm
- Number of revolutions continuously adjustable from 1000 – 60,000 rpm
- Possible to adjust the number of revolutions to 100,000 rpm with the appropriate handle



20 7120 33

20 7120 33 **High-Speed Micro-Motor**, max. speed 60,000 rpm, including connecting cable, for use with UNIDRIVE® S III ENT/NEURO


Accessories:



280053 **Universal Spray**, 6x 500 ml bottles – HAZARDOUS GOODS – UN 1950 including: **Spray Nozzle**

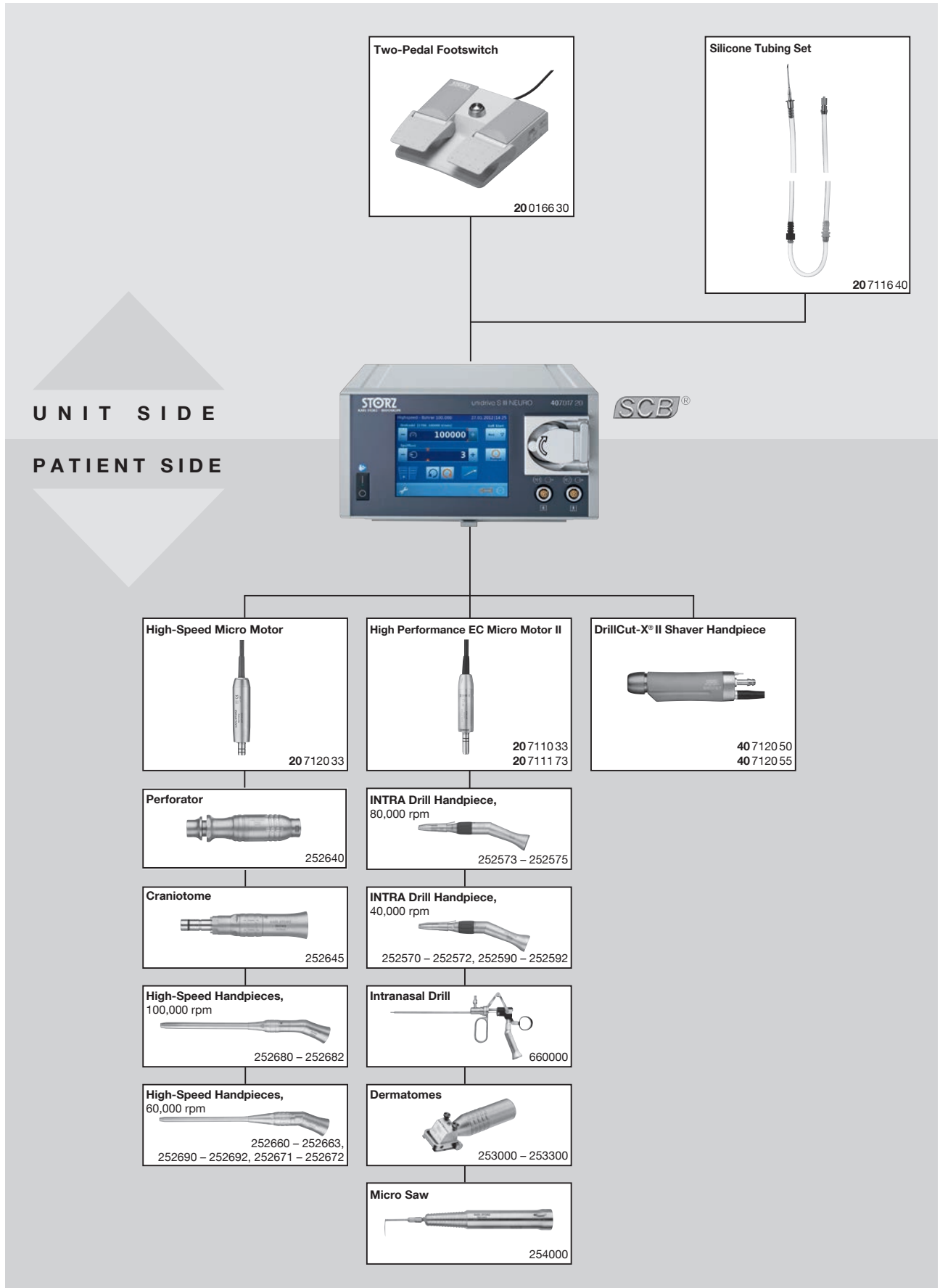


031131-10* **Tubing Set**, for irrigation, for single use, sterile, package of 10

*  mtp medical technical promotion gmbh,
Take-Off GewerbePark 46, 78579 Neuhausen ob Eck, Germany

UNIDRIVE® S III NEURO SCB ^{NEW}

System Components




Two-Pedal Footswitch



20 0166 30

Silicone Tubing Set



20 7116 40

STORZ UNIDRIVE S III NEURO 407107 20



SCB®

UNIT SIDE


PATIENT SIDE

High-Speed Micro Motor



20 7120 33

High Performance EC Micro Motor II



20 7110 33
20 7111 73

DrillCut-X® II Shaver Handpiece



40 7120 50
40 7120 55

Perforator



252640

INTRA Drill Handpiece, 80,000 rpm



252573 – 252575

Craniotome



252645

INTRA Drill Handpiece, 40,000 rpm



252570 – 252572, 252590 – 252592

High-Speed Handpieces, 100,000 rpm



252680 – 252682

Intranasal Drill



660000

High-Speed Handpieces, 60,000 rpm



252660 – 252663,
252690 – 252692, 252671 – 252672

Dermatomes



253000 – 253300

Micro Saw



254000

UNIDRIVE® S III NEURO SCB ^{NEW}

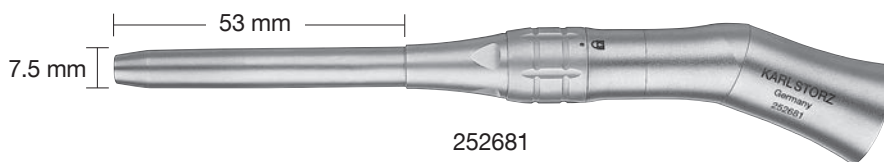
High-Speed Handpieces, angled, 100,000 rpm

For use with drills with shaft diameter 3.17 mm

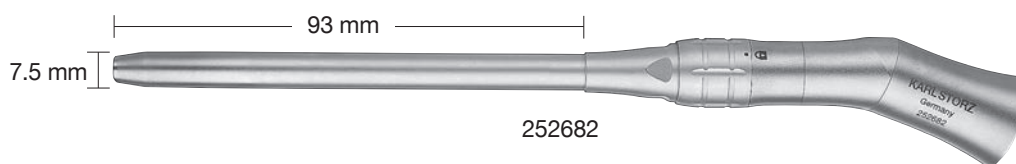
100,000 rpm
diameter 7.5 mm



252680 **High-Speed Handpiece**, short, angled, 100,000 rpm,
for use with High-Speed Micro-Motor **20 7120 33**



252681 **High-Speed Handpiece**, medium, angled, 100,000 rpm,
for use with High-Speed Micro-Motor **20 7120 33**



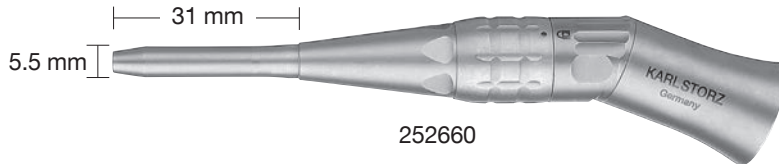
252682 **High-Speed Handpiece**, long, angled, 100,000 rpm,
for use with High-Speed Micro-Motor **20 7120 33**

UNIDRIVE® S III NEURO SCB ^{NEW}

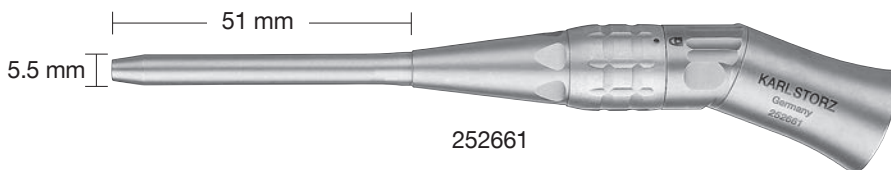
High-Speed Handpieces, angled, 60,000 rpm

For use with drills with shaft diameter 2.35 mm

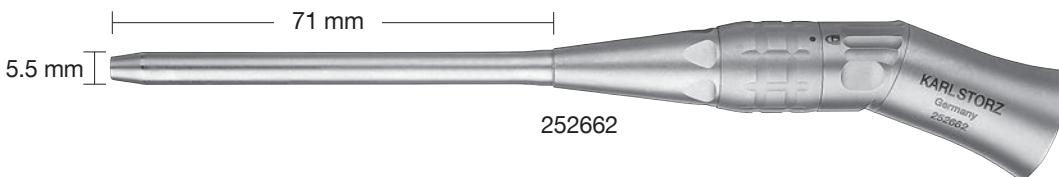
60,000 rpm
diameter 5.5 mm



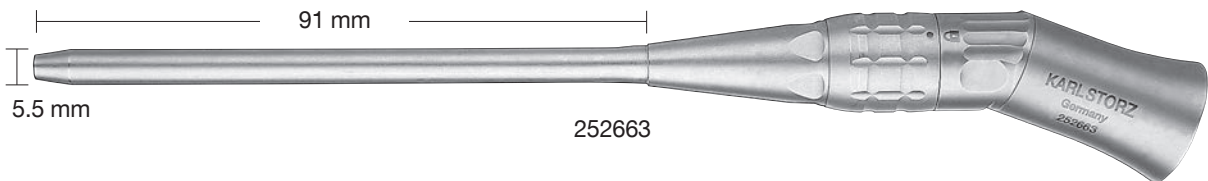
252660 **High-Speed Handpiece**, extra short, angled, 60,000 rpm,
for use with High-Speed Micro-Motor **20 7120 33**



252661 **High-Speed Handpiece**, short, angled, 60,000 rpm,
for use with High-Speed Micro-Motor **20 7120 33**



252662 **High-Speed Handpiece**, medium, angled, 60,000 rpm,
for use with High-Speed Micro-Motor **20 7120 33**



252663 **High-Speed Handpiece**, long, angled, 60,000 rpm,
for use with High-Speed Micro-Motor **20 7120 33**

UNIDRIVE® S III NEURO SCB ^{NEW}

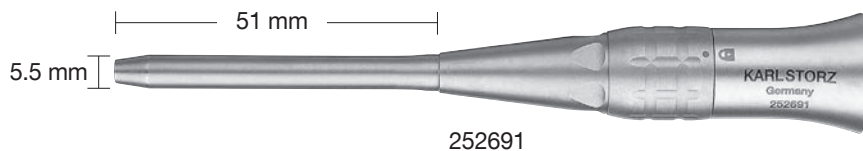
High-Speed Handpieces, straight, 60,000 rpm

For use with drills with shaft diameter 2.35 mm

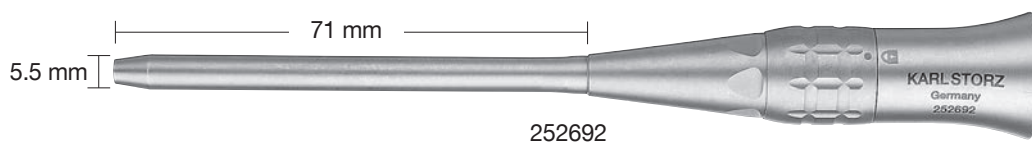
60,000 rpm
diameter 5.5 mm



252690 **High-Speed Handpiece**, extra short, straight, 60,000 rpm, for use with High-Speed Micro-Motor **20 7120 33**



252691 **High-Speed Handpiece**, short, straight, 60,000 rpm, for use with High-Speed Micro-Motor **20 7120 33**



252692 **High-Speed Handpiece**, medium, straight, 60,000 rpm, for use with High-Speed Micro-Motor **20 7120 33**

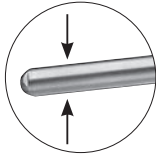
UNIDRIVE® S III NEURO SCB ^{NEW}

High-Speed Handpieces, malleable, slim, angled, 60,000 rpm

For use with drills with shaft diameter 1 mm

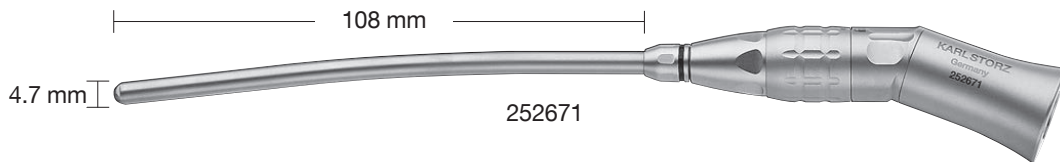
60,000 rpm

diameter 4.7 mm

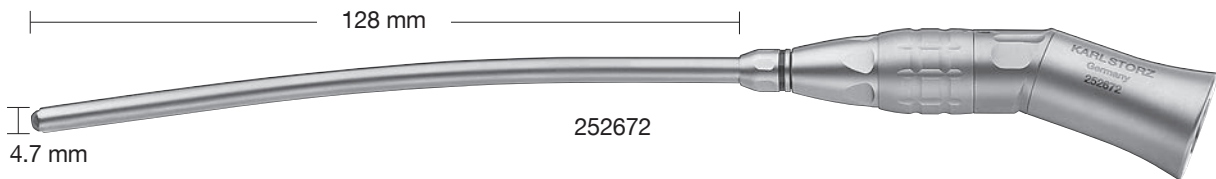


malleable

The handpieces have malleable shafts that can be bent up to 20° according to user requirements.



252671 **High-Speed Handpiece**, extra long, malleable, slim, angled, 60,000 rpm, for use with High-Speed Micro-Motor **20 7120 33**



252672 **High-Speed Handpiece**, super long, malleable, slim, angled, 60,000 rpm, for use with High-Speed Micro-Motor **20 7120 33**

UNIDRIVE® S III NEURO SCB ^{NEW}

For use with High-Speed Handpieces, 100,000 rpm

For use with High-Speed Handpieces, 100,000 rpm

100,000 rpm
diameter 7.5 mm



252680



252681



252682



High-Speed Standard Burrs, 100,000 rpm, **for single use**, sterile, package of 5

Diameter in mm	short	medium	long
1	350110 S	350110 M	–
2	350120 S	350120 M	350120 L
3	350130 S	350130 M	350130 L
4	350140 S	350140 M	350140 L
5	350150 S	350150 M	350150 L
6	350160 S	350160 M	350160 L
7	350170 S	350170 M	350170 L



High-Speed Diamond Burrs, 100,000 rpm, **for single use**, sterile, package of 5

Diameter in mm	short	medium	long
1	350210 S	350210 M	–
2	350220 S	350220 M	350220 L
3	350230 S	350230 M	350230 L
4	350240 S	350240 M	350240 L
5	350250 S	350250 M	350250 L
6	350260 S	350260 M	350260 L
7	350270 S	350270 M	350270 L

UNIDRIVE® S III NEURO SCB ^{NEW}

High-Speed Coarse Diamond Burrs, High-Speed Acorns,
High-Speed Barrel Burrs, High-Speed Neuro Fluted Burrs

For use with High-Speed Handpieces, 100,000 rpm

100,000 rpm
diameter 7.5 mm



252680





252681





252682



 High-Speed Coarse Diamond Burrs, 100,000 rpm, for single use , sterile, package of 5			
Diameter in mm	short	medium	long
3	350330 S	350330 M	350330 L
4	350340 S	350340 M	350340 L
5	350350 S	350350 M	350350 L
6	350360 S	350360 M	350360 L
7	350370 S	350370 M	350370 L

 High-Speed Acorns, 100,000 rpm, for single use , sterile, package of 5		
Diameter in mm	short	medium
7.5	350675 S	350675 M
9	350690 S	350690 M

 High-Speed Barrel Burrs, 100,000 rpm, for single use , sterile, package of 5		
Diameter in mm	short	medium
6	350960 S	350960 M
9.1	350991 S	350991 M

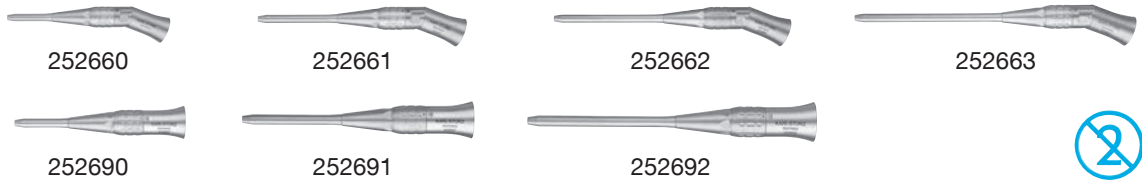
 High-Speed Neuro Fluted Burrs, 100,000 rpm, for single use , sterile, package of 5			
Diameter in mm	short	medium	long
1.8	350718 S	350718 M	350718 L
3	350730 S	350730 M	350730 L

UNIDRIVE® S III NEURO SCB ^{NEW}

High-Speed Standard Burrs, High-Speed Diamond Burrs

For use with High-Speed Handpieces, 60,000 rpm

60,000 rpm
diameter 5.5 mm



High-Speed Standard Burrs, 60,000 rpm, **for single use**, sterile, package of 5

Diameter in mm	extra short	short	medium	long
1	330110 ES	330110 S	330110 M	–
2	330120 ES	330120 S	330120 M	330120 L
3	330130 ES	330130 S	330130 M	330130 L
4	330140 ES	330140 S	330140 M	330140 L
5	330150 ES	330150 S	330150 M	330150 L
6	330160 ES	330160 S	330160 M	330160 L
7	330170 ES	330170 S	330170 M	330170 L



High-Speed Diamond Burrs, 60,000 rpm, **for single use**, sterile, package of 5

Diameter in mm	extra short	short	medium	long
0.6	330206 ES	330206 S	–	–
1	330210 ES	330210 S	330210 M	–
1.5	330215 ES	330215 S	–	–
2	330220 ES	330220 S	330220 M	330220 L
3	330230 ES	330230 S	330230 M	330230 L
4	330240 ES	330240 S	330240 M	330240 L
5	330250 ES	330250 S	330250 M	330250 L
6	330260 ES	330260 S	330260 M	330260 L
7	330270 ES	330270 S	330270 M	330270 L

UNIDRIVE® S III NEURO SCB ^{NEW}

High-Speed Diamond Burrs, High-Speed Barrel Burrs,
LINDEMANN High-Speed Fluted Burrs

For use with High-Speed Handpieces, 60,000 rpm

60,000 rpm
diameter 5.5 mm



252660



252661



252662



252663



252690



252691



252692



High-Speed Coarse Diamond Burrs, 60,000 rpm, **for single use**,
sterile, package of 5

Diameter in mm	extra short	short	medium	long
3	330330 ES	330330 S	330330 M	330330 L
4	330340 ES	330340 S	330340 M	330340 L
5	330350 ES	330350 S	330350 M	330350 L
6	330360 ES	330360 S	330360 M	330360 L
7	330370 ES	330370 S	330370 M	330370 L



High-Speed Cylinder Burrs, 60,000 rpm, **for single use**,
sterile, package of 5

Diameter in mm	extra short	short
4	330440 ES	330440 S
6	330460 ES	330460 S



LINDEMANN High-Speed Fluted Burrs, 60,000 rpm, **for single use**,
sterile, package of 5

Diameter in mm (diameter x length)	extra short	short
Diameter 2.1/11	330511 ES	330511 S
Diameter 2.3/26	330526 ES	330526 S

UNIDRIVE® S III NEURO SCB ^{NEW}

High-Speed Diamond Burrs

For use with High-Speed Handpieces, 60,000 rpm

60,000 rpm
diameter 4.7 mm





252671



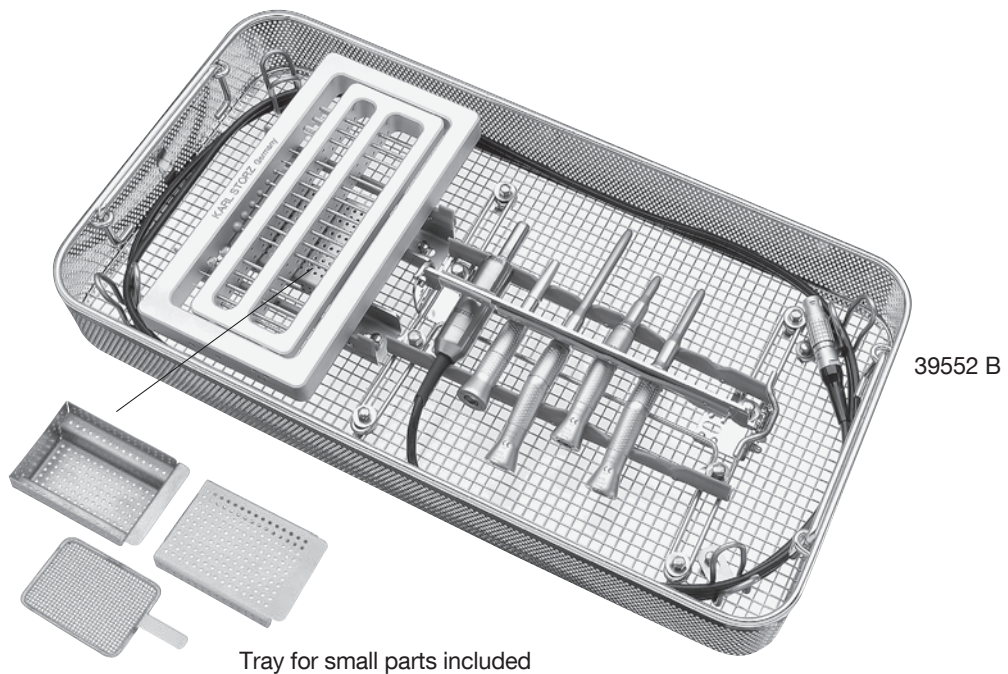
252672



 High-Speed Diamond Burrs, 60,000 rpm, for single use , sterile, package of 5		
Diameter in mm	extra long	super long
2	320220 EL	320220 SL
3	320230 EL	320230 SL
4	320240 EL	320240 SL

 High-Speed Coarse Diamond Burrs, 60,000 rpm, for single use , sterile, package of 5		
Diameter in mm	extra long	super long
2	320320 EL	320320 SL
3	320330 EL	320330 SL
4	320340 EL	320340 SL

Accessories for Burrs



Tray for small parts included

39552 A **Wire Tray**, provides safe storage of accessories for KARL STORZ drilling/grinding systems during cleaning and sterilization, includes tray for small parts, for use with Rack 280030, rack **not** included

for storage of:

- Up to 6 drill handpieces
- Connecting cable
- EC micro motor
- Small parts

39552 B **Wire Tray**, provides safe storage of accessories for KARL STORZ drilling/grinding systems during cleaning and sterilization, includes tray for small parts, for use with Rack 280030, rack **included**

for storage of:

- Up to 6 drill handpieces
- Connecting cable
- EC micro motor
- Up to 36 drill bits and burrs
- Small parts

Please note: The instruments displayed are not included in the sterilizing and storage tray.

IMAGE1 S Camera System ^{NEW}



Economical and future-proof

- Modular concept for flexible, rigid and 3D endoscopy as well as new technologies
- Forward and backward compatibility with video endoscopes and FULL HD camera heads



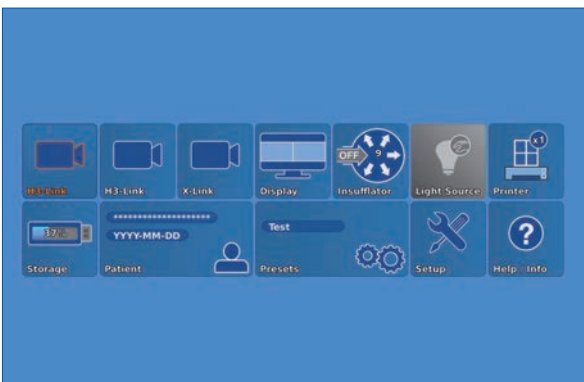
- Sustainable investment
- Compatible with all light sources



Innovative Design

- Dashboard: Complete overview with intuitive menu guidance
- Live menu: User-friendly and customizable
- Intelligent icons: Graphic representation changes when settings of connected devices or the entire system are adjusted

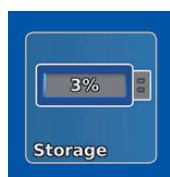
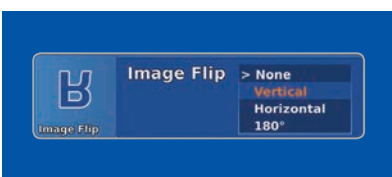
- Automatic light source control
- Side-by-side view: Parallel display of standard image and the Visualization mode
- Multiple source control: IMAGE1 S allows the simultaneous display, processing and documentation of image information from two connected image sources, e.g., for hybrid operations



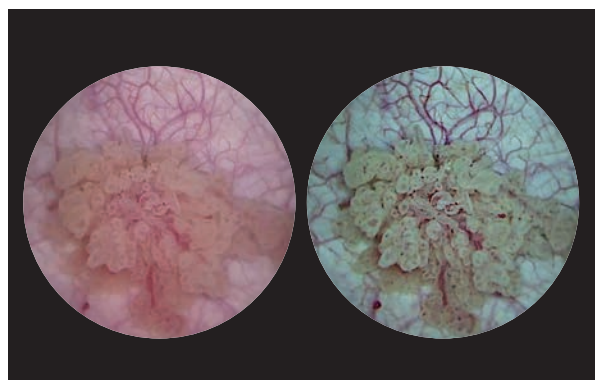
Dashboard



Live menu



Intelligent icons



Side-by-side view: Parallel display of standard image and Visualization mode

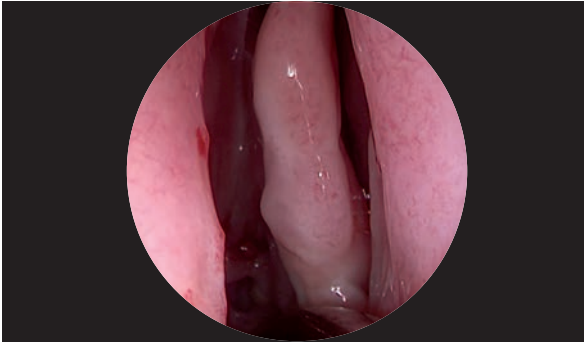
IMAGE1 S Camera System ^{NEW}

IMAGE1 S

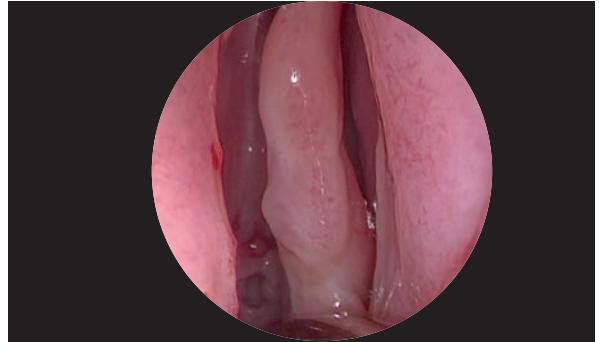
Brilliant Imaging

- Clear and razor-sharp endoscopic images in FULL HD
- Natural color rendition

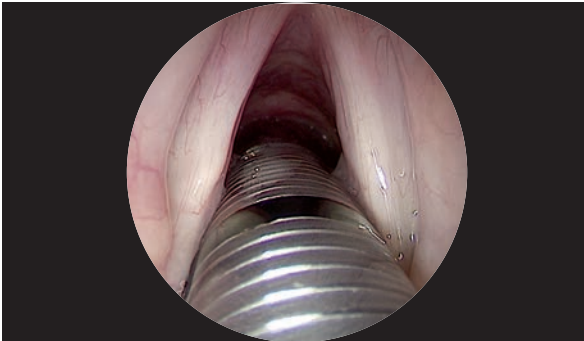
- Reflection is minimized
- Multiple IMAGE1 S technologies for homogeneous illumination, contrast enhancement and color shifting



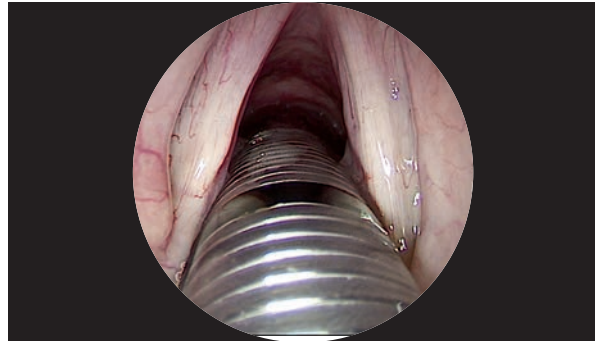
FULL HD image



CLARA



FULL HD image



CHROMA



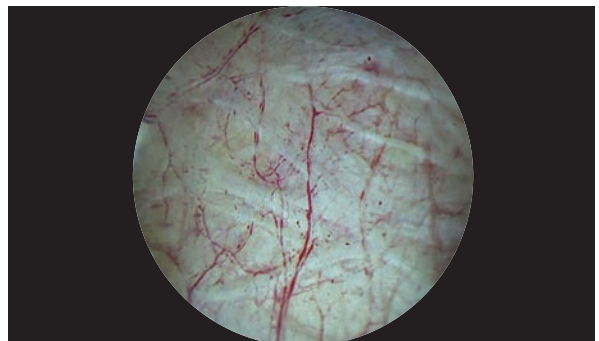
FULL HD image



SPECTRA A*



FULL HD image



SPECTRA B**

* SPECTRA A: Not for sale in the U.S.

** SPECTRA B: Not for sale in the U.S.

IMAGE1 S Camera System ^{NEW}

IMAGE1 S



TC 200EN

TC 200EN* **IMAGE1 S CONNECT**, connect module, for use with up to 3 link modules, resolution 1920 x 1080 pixels, with integrated KARL STORZ-SCB and digital Image Processing Module, power supply 100–120 VAC/200–240 VAC, 50/60 Hz including:

Mains Cord, length 300 cm

DVI-D Connecting Cable, length 300 cm

SCB Connecting Cable, length 100 cm

USB Flash Drive, 32 GB, USB silicone keyboard, with touchpad, US

* Available in the following languages: DE, ES, FR, IT, PT, RU

Specifications:

HD video outputs	- 2x DVI-D - 1x 3G-SDI
Format signal outputs	1920 x 1080p, 50/60 Hz
LINK video inputs	3x
USB interface	4x USB, (2x front, 2x rear)
SCB interface	2x 6-pin mini-DIN

Power supply	100–120 VAC/200–240 VAC
Power frequency	50/60 Hz
Protection class	I, CF-Defib
Dimensions w x h x d	305 x 54 x 320 mm
Weight	2.1 kg

For use with IMAGE1 S IMAGE1 S CONNECT Module TC 200EN



TC 300

TC 300 **IMAGE1 S H3-LINK**, link module, for use with IMAGE1 FULL HD three-chip camera heads, power supply 100–120 VAC/200–240 VAC, 50/60 Hz, **for use with IMAGE1 S CONNECT TC 200EN**

including:

Mains Cord, length 300 cm

Link Cable, length 20 cm

Specifications:

Camera System	TC 300 (H3-Link)
Supported camera heads/video endoscopes	TH 100, TH 101, TH 102, TH 103, TH 104, TH 106 (fully compatible with IMAGE1 S) 22220055-3, 22220056-3, 22220053-3, 22220060-3, 22220061-3, 22220054-3, 22220085-3 (compatible without IMAGE1 S technologies CLARA, CHROMA, SPECTRA*)
LINK video outputs	1x
Power supply	100–120 VAC/200–240 VAC
Power frequency	50/60 Hz
Protection class	I, CF-Defib
Dimensions w x h x d	305 x 54 x 320 mm
Weight	1.86 kg

* SPECTRA A: Not for sale in the U.S.

** SPECTRA B: Not for sale in the U.S.

IMAGE1 S Camera Heads ^{NEW}

IMAGE1 S

For use with IMAGE1 S Camera System
IMAGE1 S CONNECT Module TC 200EN, IMAGE1 S H3-LINK Module TC 300
 and with all IMAGE1 HUB™ HD Camera Control Units



TH 100

TH 100

IMAGE1 S H3-Z Three-Chip FULL HD Camera Head,
 50/60 Hz, IMAGE1 S compatible, progressive scan,
 soakable, gas- and plasma-sterilizable, with integrated
 Parfocal Zoom Lens, focal length $f = 15\text{--}31$ mm (2x),
 2 freely programmable camera head buttons,
 for use with IMAGE1 S and IMAGE1 HUB™ HD/HD

Specifications:

IMAGE1 FULL HD Camera Heads	IMAGE1 S H3-Z
Product no.	TH 100
Image sensor	3x 1/8" CCD chip
Dimensions w x h x d	39 x 49 x 114 mm
Weight	270 g
Optical interface	integrated Parfocal Zoom Lens, $f = 15\text{--}31$ mm (2x)
Min. sensitivity	F 1.4/1.17 Lux
Grip mechanism	standard eyepiece adaptor
Cable	non-detachable
Cable length	300 cm



TH 104

TH 104

IMAGE1 S H3-ZA Three-Chip FULL HD Camera Head,
 50/60 Hz, IMAGE1 S compatible, **autoclavable**,
 progressive scan, soakable, gas- and plasma-sterilizable,
 with integrated Parfocal Zoom Lens, focal length
 $f = 15\text{--}31$ mm (2x), 2 freely programmable camera head
 buttons, for use with IMAGE1 S and IMAGE1 HUB™ HD/HD

Specifications:

IMAGE1 FULL HD Camera Heads	IMAGE1 S H3-ZA
Product no.	TH 104
Image sensor	3x 1/8" CCD chip
Dimensions w x h x d	39 x 49 x 100 mm
Weight	299 g
Optical interface	integrated Parfocal Zoom Lens, $f = 15\text{--}31$ mm (2x)
Min. sensitivity	F 1.4/1.17 Lux
Grip mechanism	standard eyepiece adaptor
Cable	non-detachable
Cable length	300 cm

Monitors



9619 NB

9619 NB

19" HD Monitor,
color systems **PAL/NTSC**, max. screen
resolution 1280 x 1024, image format 4:3,
power supply 100–240 VAC, 50/60 Hz,
wall-mounted with VESA 100 adaption,
including:
External 24 VDC Power Supply
Mains Cord



9826 NB

9826 NB

26" FULL HD Monitor,
wall-mounted with VESA 100 adaption,
color systems **PAL/NTSC**,
max. screen resolution 1920 x 1080,
image format 16:9,
power supply 100–240 VAC, 50/60 Hz
including:
External 24 VDC Power Supply
Mains Cord

Monitors

KARL STORZ HD and FULL HD Monitors	19"	26"
Wall-mounted with VESA 100 adaption	9619 NB	9826 NB
Inputs:		
DVI-D	●	●
Fibre Optic		
3G-SDI		●
RGBS (VGA)	●	●
S-Video	●	●
Composite/FBAS	●	●
Outputs:		
DVI-D	●	●
S-Video	●	
Composite/FBAS	●	●
RGBS (VGA)	●	
3G-SDI		●
Signal Format Display:		
4:3	●	●
5:4	●	●
16:9	●	●
Picture-in-Picture	●	●
PAL/NTSC compatible	●	●

Optional accessories:

9826 SF **Pedestal**, for monitor 9826 NB

9626 SF **Pedestal**, for monitor 9619 NB

Specifications:

KARL STORZ HD and FULL HD Monitors	19"	26"
Desktop with pedestal	optional	optional
Product no.	9619 NB	9826 NB
Brightness	200 cd/m ² (typ)	500 cd/m ² (typ)
Max. viewing angle	178° vertical	178° vertical
Pixel distance	0.29 mm	0.3 mm
Reaction time	5 ms	8 ms
Contrast ratio	700:1	1400:1
Mount	100 mm VESA	100 mm VESA
Weight	7.6 kg	7.7 kg
Rated power	28 W	72 W
Operating conditions	0–40°C	5–35°C
Storage	-20–60°C	-20–60°C
Rel. humidity	max. 85%	max. 85%
Dimensions w x h x d	469.5 x 416 x 75.5 mm	643 x 396 x 87 mm
Power supply	100–240 VAC	100–240 VAC
Certified to	EN 60601-1, protection class IPX0	EN 60601-1, UL 60601-1, MDD93/42/EEC, protection class IPX2

42" HD Flat Screen Monitor (see page 7, Fig. 4)

- W 29642 NBO **42" HD Flat Screen Monitor**,
aspect ratio 16:9 wall-mounted, VESA 300 x 100
color system **PAL/NTSC**, resolution max. 1920 x 1080
SD-SDI, HD-SDI (1080i), composite video,
S-Video, RGB, DVI-I and optical DVI-D (1080p)
input with electric redrive and VGA input brightness: 500 cd/m²,
contrast: 1300:1, power supply: 100-240 VAC, 50/60 Hz
Dimensions in mm WxHxD: 1030 x 633 x 119
Weight in kg: 30
including:
42" HD TFT Flat Screen
Mains Cord
Video cable set (DVI-D, BNC, S-Video, VGA)
- Note:** Fibreoptic cable, the signal converter/transmitter W 26074
(DVI-D to optical signal) and the corresponding power
supply W 26110 are not part of the delivery and have to
be ordered separately.
- W 30567 **Mobile Cart for Large Screens**,
with VESA plate 100 x 100/200 x 200
for mounting large screens 42" or more
Dimensions:
Platform (w x d) in mm: 820 x 665
Height without monitor: 1700 mm
Weight: 20 kg,
including:
Steel platform, rides on 4 casters,
caster diameter 100 mm
Column mount with cross bars, height 1500 mm
VESA plate, 100 x 100/200 x 200
- W 26091 **Fibre optic cable**,
for transmission of a DVI-D signal, with fixed transmitter- and
receiver-modules. For transmission of the HD-signal of the
IMAGE1 HD HUB™ camera-control unit to an HDTV monitor,
connectors DVI-D male length 10 m

Cold Light Fountains and Accessories



495 NL

Fiber Optic Light Cable,
with straight connector, diameter 3.5 mm,
length 180 cm

495 NA

Same, length 230 cm

Cold Light Fountain XENON 300 SCB



20133101-1

Cold Light Fountain XENON 300 SCB
with built-in antifog air-pump, and integrated
KARL STORZ Communication Bus System SCB
power supply:
100–125 VAC/220–240 VAC, 50/60 Hz
including:

Mains Cord

Silicone Tubing Set, autoclavable, length 250 cm

SCB Connecting Cable, length 100 cm

20133027

Spare Lamp Module XENON
with heat sink, 300 watt, 15 volt

20133028

XENON Spare Lamp, only,
300 watt, 15 volt

Cold Light Fountain XENON NOVA® 300



20134001

Cold Light Fountain XENON NOVA® 300,
power supply:
100–125 VCA/220–240 VAC, 50/60 Hz

including:

Mains Cord

20132028

XENON Spare Lamp, only,
300 watt, 15 volt

KARL STORZ AIDA® compact NEO advanced

Brilliance in documentation



AIDA compact NEO:
Recording screen



AIDA compact NEO:
Patient data



AIDA compact NEO:
Review screen

Data Acquisition

Still images, video sequences and audio comments can easily be recorded during an examination or intervention by pressing the on-screen button, activating the footswitch, or pressing the camera head button.

All captured data are displayed on the right-hand side as a thumbnail preview to ensure the data have been generated. Patient data can be entered via an onscreen or standard keyboard. The system also offers the possibility to transfer all relevant patient data via a DICOM worklist or a link to the hospital information system (HIS) without requiring manual entry in the patient entry screen.

Flexible Review, Data Storage and Efficient Data Export

Captured still images or video files can easily be viewed, edited, or deleted on-screen before final storage. KARL STORZ AIDA® compact NEO efficiently stores all recorded data on DVD, CD, USB stick, external/internal drive, the relevant network and/or on a FTP server. It is also possible to save the data directly on the PACS and/or HIS servers via HL7/DICOM. Data that cannot be stored successfully remains in a cache until final archiving is possible.

Special Features:

- **SD and HD signal support:**
 - Y/C (S-Video)
 - Composite input
 - DVI-D input
- **Picture-in-Picture function:**
Display of channel 2 (SD) in channel 1 (FULL HD)
- **Resolution:**
 - Still images 1920 x 1080 and SD
 - Videos 1080p, 720p and SD
- **Interface package (DICOM/H7) included**
- **NEO Secure security software**
- **Recommended applications:**
 - Universal (cart or OR1™ installation)



20 0409 13-EN* KARL STORZ AIDA® compact NEO advanced

Documentation system for digital storage of still images, video sequences and audio files, power supply 115/230 VAC, 50/60 Hz

* **Available in the following languages:**
DE, ES, FR, IT, PT, PL, RU, DK, SE, JP, CN

Equipment Cart



UG 220

UG 220

Equipment Cart

wide, high, rides on 4 antistatic dual wheels equipped with locking brakes 3 shelves, mains switch on top cover, central beam with integrated electrical subdistributors with 12 sockets, holder for power supplies, potential earth connectors and cable winding on the outside,

Dimensions:

Equipment cart: 830 x 1474 x 730 mm (w x h x d),

shelf: 630 x 510 mm (w x d),

caster diameter: 150 mm

including:

Base module equipment cart, wide

Cover equipment, equipment cart wide

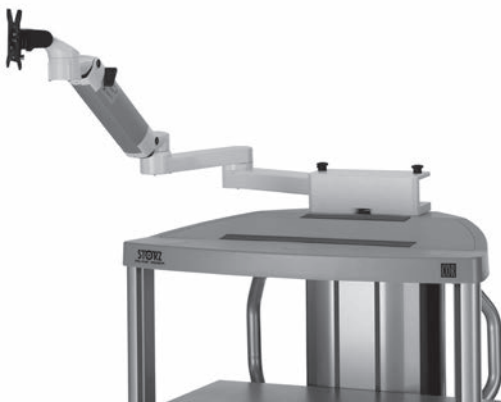
Beam package equipment, equipment cart high

3x **Shelf**, wide

Drawer unit with lock, wide

2x **Equipment rail**, long

Camera holder



UG 540

UG 540

Monitor Swivel Arm,

height and side adjustable, can be turned to the left or the right side, swivel range 180°, overhang 780 mm, overhang from centre 1170 mm, load capacity max. 15 kg, with monitor fixation VESA 5/100, for usage with equipment carts UG xxx

Recommended Accessories for Equipment Cart



UG 310

UG 310 **Isolation Transformer,**
200 V–240 V; 2000 VA with 3 special mains socket,
expulsion fuses, 3 grounding plugs,
dimensions: 330 x 90 x 495 mm (w x h x d),
for usage with equipment carts UG xxx



UG 410

UG 410 **Earth Leakage Monitor,**
200 V–240 V, for mounting at equipment cart,
control panel dimensions: 44 x 80 x 29 mm (w x h x d),
for usage with isolation transformer UG 310



UG 510

UG 510 **Monitor Holding Arm,**
height adjustable, inclinable,
mountable on left or right,
turning radius approx. 320°, overhang 530 mm,
load capacity max. 15 kg,
monitor fixation VESA 75/100,
for usage with equipment carts UG xxx

Notes:

**WITH COMPLIMENTS OF
KARL STORZ—ENDOSKOPE**