



The International Federation of Head and Neck Oncologic Societies

Current Concepts in Head and Neck Surgery and Oncology 2017



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Management of Salivary Gland Tumors

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Salivary Glands

Major:

Parotid

Submandibular

Sublingual

Minor salivary glands:

600 - 800 all over the upper aerodigestive tract

Majority on the palate

Salivary Literature

1990 to 2011

Subject	# Papers
Salivary gland diseases	19,754
Salivary neoplasms	7,914
Needle biopsies	14,713
Salivary – needle biopsies	397

Salivary Gland Neoplasms

Management Issues

Evaluation (FNAB, CT, MRI)

Stage v. Grade

Imaging

Facial nerve

Adjunctive radiotherapy

Definitive radiotherapy

Salivary Tumors

Sites of Origin

Sites	# Pts	%
Parotid	1,965	70.0
Submandibular	235	8.4
Palate	228	8.0
Lips/Cheek	73	2.6
Antrum	72	2.6
Tongue	63	2.2
Nasal cavity	60	2.1
Gingiva	34	1.2
Floor of mouth	22	0.8
Larynx	21	0.8
Tonsil	13	0.5
Ethmoid	9	0.3
Nasopharynx	9	0.3
Pharyngeal wall	3	0.1

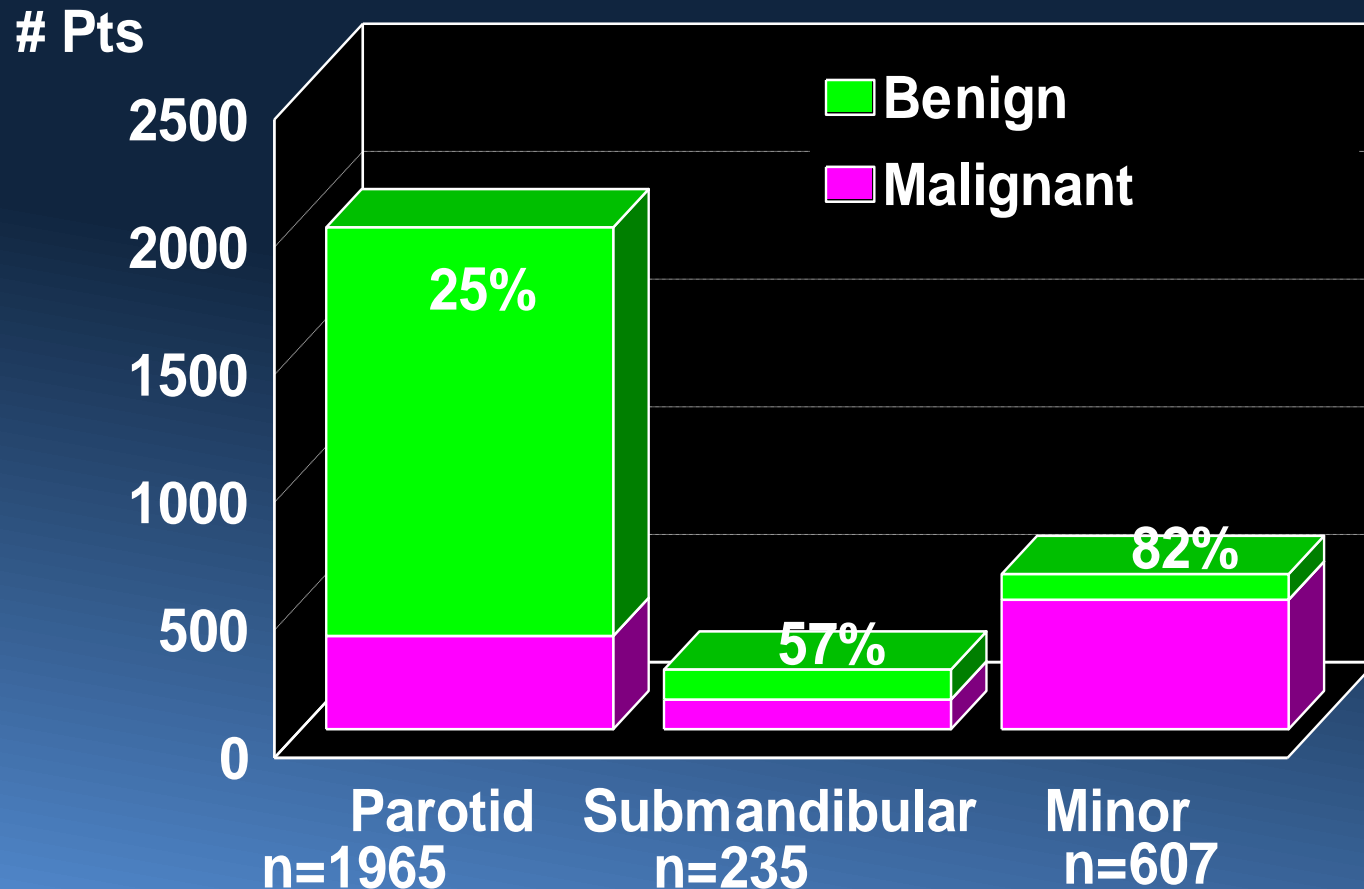
TOTAL

2,807

100.0

Salivary Gland Neoplasms*

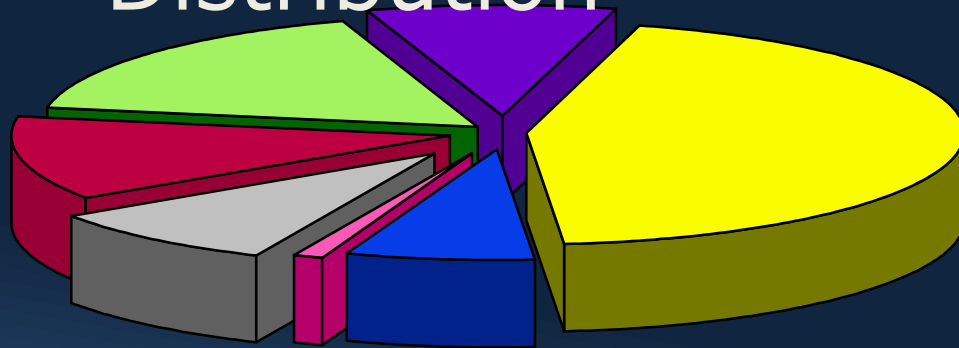
PROPORTION MALIGNANT



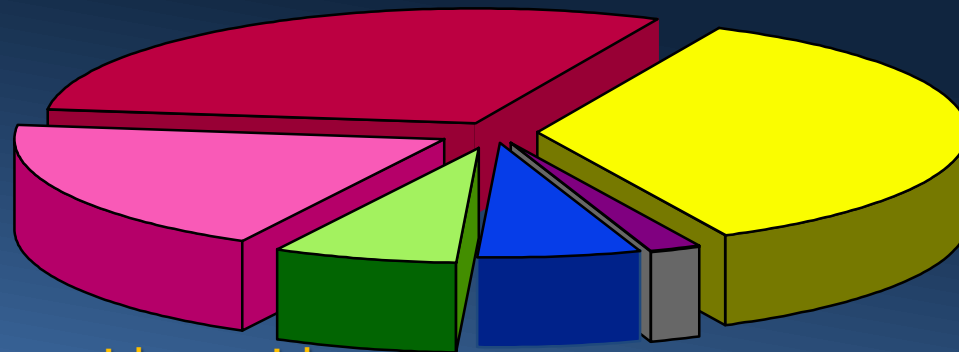
2017 *MSKCC 1939-73 (Head Neck Surg 1986)



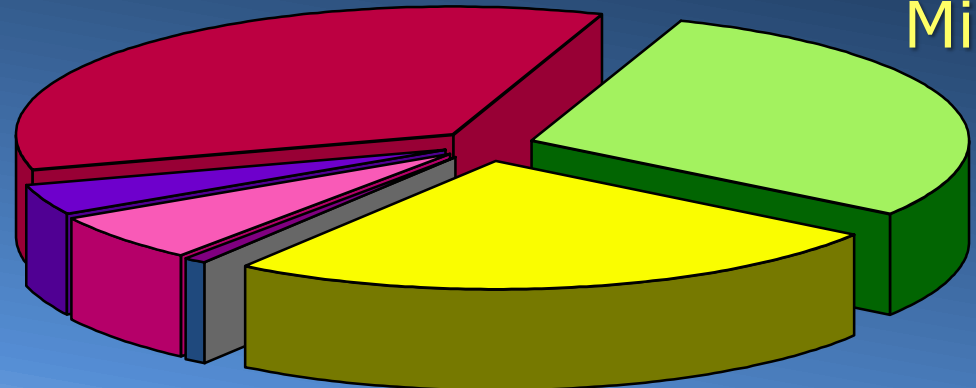
Salivary Tumors - Histologic Distribution



Parotid



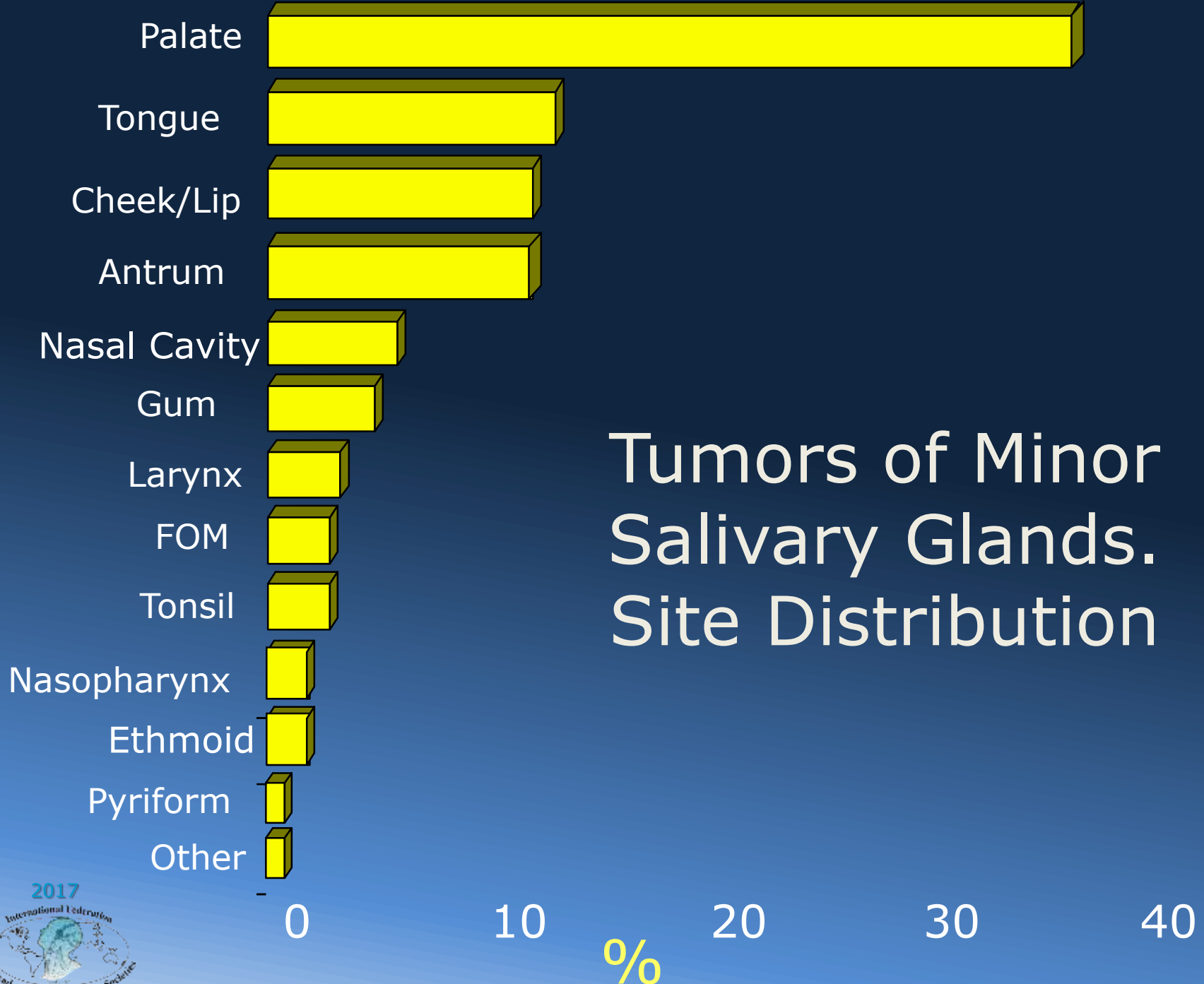
Sub - Max



Minor

- Mucoepidermoid
- Adenoid cystic
- Adenocarcinoma
- Malignant mixed
- Acinic cell
- Squamous
- Other

Tumors of Minor Salivary Glands. Site Distribution



Parotid Tumors

Pathology – Memorial Hospital, 1939-1973

(N=1973)

Benign (n=1342)

Malignant (n=631)

Pleomorphic adenoma

1133

Mucoepidermoid

272

Warthin's

183

Adenocarcinoma

62

Oncocytoma

20

Acinic cell

75

Monomorphic

6

Adenoid cystic

62

Ca ex pleomorphic

107

Undiff

8

Epidermoid

45

Presentation

Lump

Pain

Facial weakness

Neck metastases

Parapharyngeal mass – deep lobe tumors



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Salivary Gland Tumors

- Dumb bell tumor
- Deep lobe tumor
- Parapharyngeal space
- Extraparotid salivary tissue

Parotid Carcinoma: Obvious Signs

- Facial nerve palsy
- Cervical metastasis
- Skin involvement



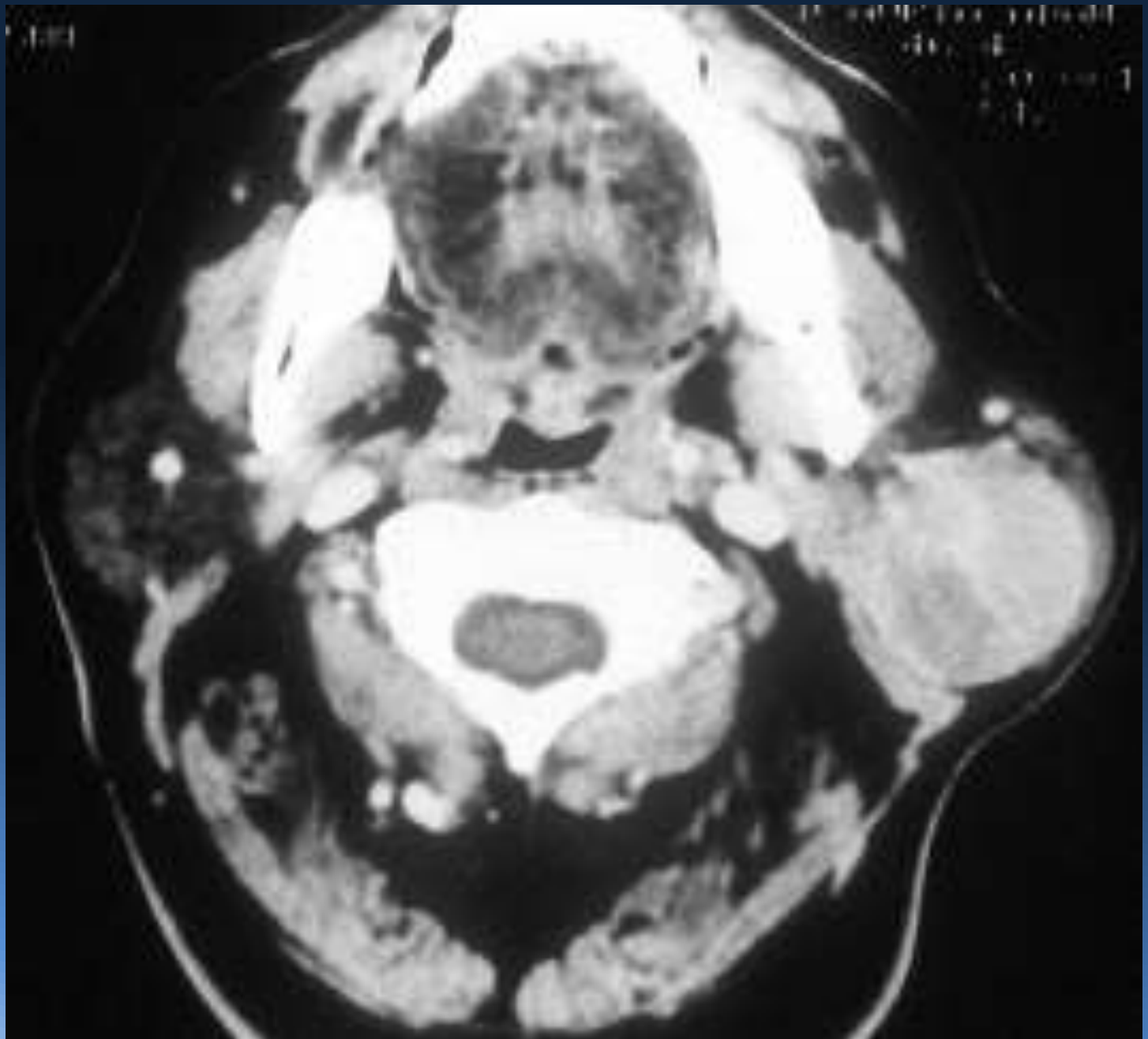
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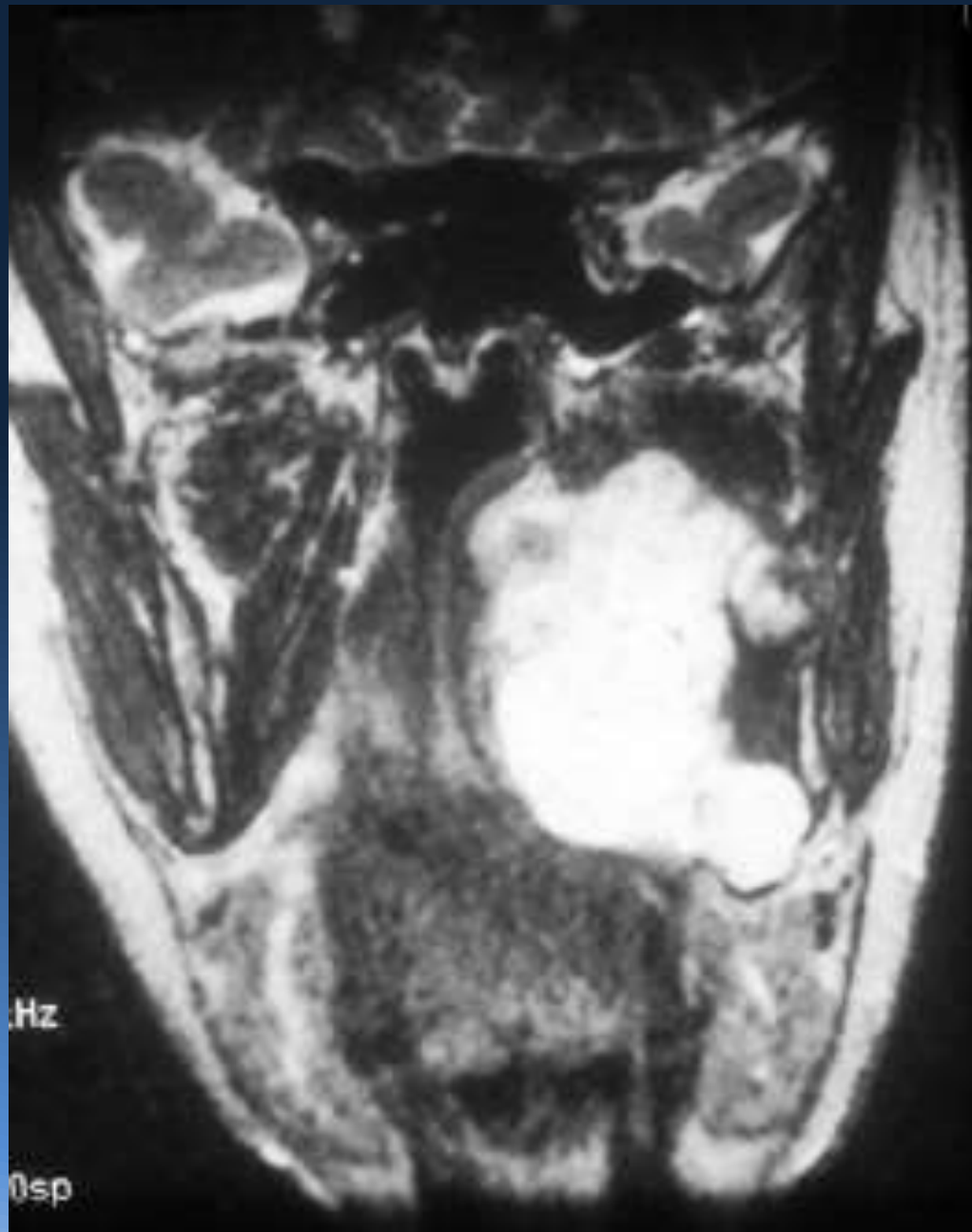
Investigations

- Clinical evaluation
- Sialogram
- CT scan
- CT sialogram
- Needle biopsy
- Sialendoscopy



Parotid Tumors Indications for CT Scan

- Clinical uncertainty of findings
- Deep lobe presentation
- Extraglandular extension
- Cervical nodal involvement
- Facial palsy or fixed mass
- Recurrent Tumor
- Parapharyngeal Tumor



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Role of Imaging

1. CT scanning is superior to MRI for osseous and skull base involvement but MRI is superior for intracranial extension of tumour
2. MRI is superior to CT for assessment of primary disease and regional recurrence, as well as characterising extra parotid extension. Perineural invasion is best characterised with MRI

3. Minor salivary gland tumours are best

imaged with MRI with irregular margins

Robson, 2002

Role of Needle Biopsy in Salivary Tumors

- To suspect malignancy
- To distinguish from metastatic carcinoma
- To suspect lymphoma
- To distinguish salivary from non-salivary tumors
 - In poor risk pt - if suspect Warthin's tumor
 - To confirm pre-op suspicion of malignancy in pts with facial palsy
- In bilateral tumors
- Minimum risks

Mass in Parotid Region

History/Head & Neck Exam

FNA

Salivary

Non-Salivary

Benign

Malignant

Lipoma

Mixed tumor

Primary

Metastatic

Seb. Cyst

Warthin's

Ad-Cystic

Sq Ca.

Lymph Nodes

Adeno Ca.

Melanoma

Benign

Melanoma

Met Ca.

Lymphoma



Salivary Gland Tumors

General Principles of Treatment

- Tumor factors
- Patient factors
- Physician factors

Parotid Tumor Surgical Principles

Every attempt should be made to remove all gross tumor. Radiation therapy does not compensate for inadequate surgery.

Parotid Tumor Surgical Principles

- The extent of parotidectomy depends more upon the extent of the tumor than the histology of the tumor.
- Superficial Parotidectomy
- Extra-Capsular Dissection

Salivary Gland Carcinoma Treatment Principles

The anatomic relationship of the tumor to the nerve dictates the extent of surgery, not the histologic classification of the neoplasm.

Malignant Tumors

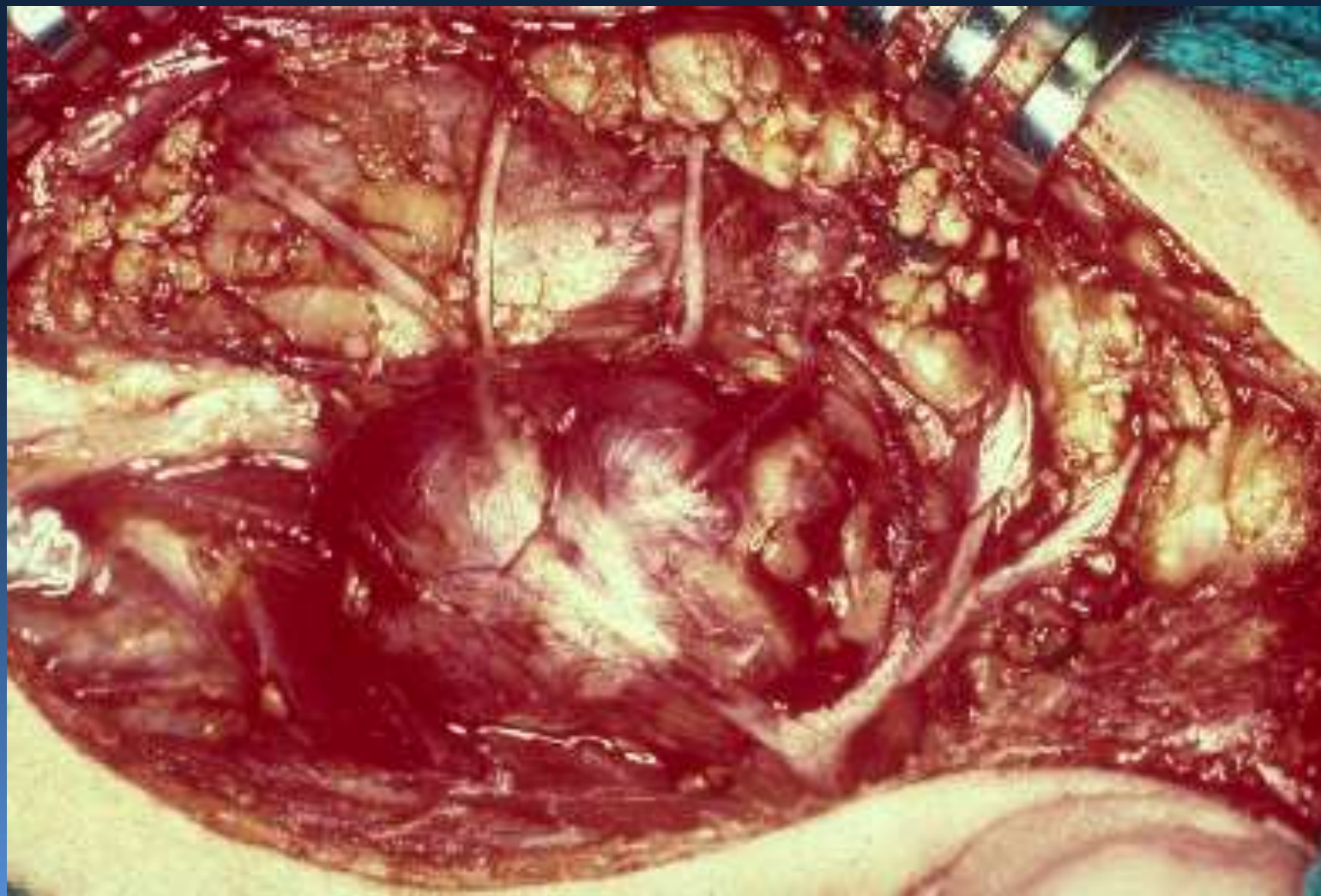
Surgical treatment of the primary tumour

- Parotid Gland:

- Size and location determine extent of resection
- Most T1/T2 lesions lateral to the nerve are suitable for a superficial parotidectomy
- Larger and deep lobe tumours usually require a total conservative parotidectomy with preservation of the facial nerve
- Patients with high grade extensive disease (i.e. skin involvement or facial palsy) may require extended radical parotidectomy
- In one series, facial nerve dysfunction was apparent initially in 14% of patients and complete nerve sacrifice was required in about 30% of parotidectomies

Indications of Facial Nerve Resection

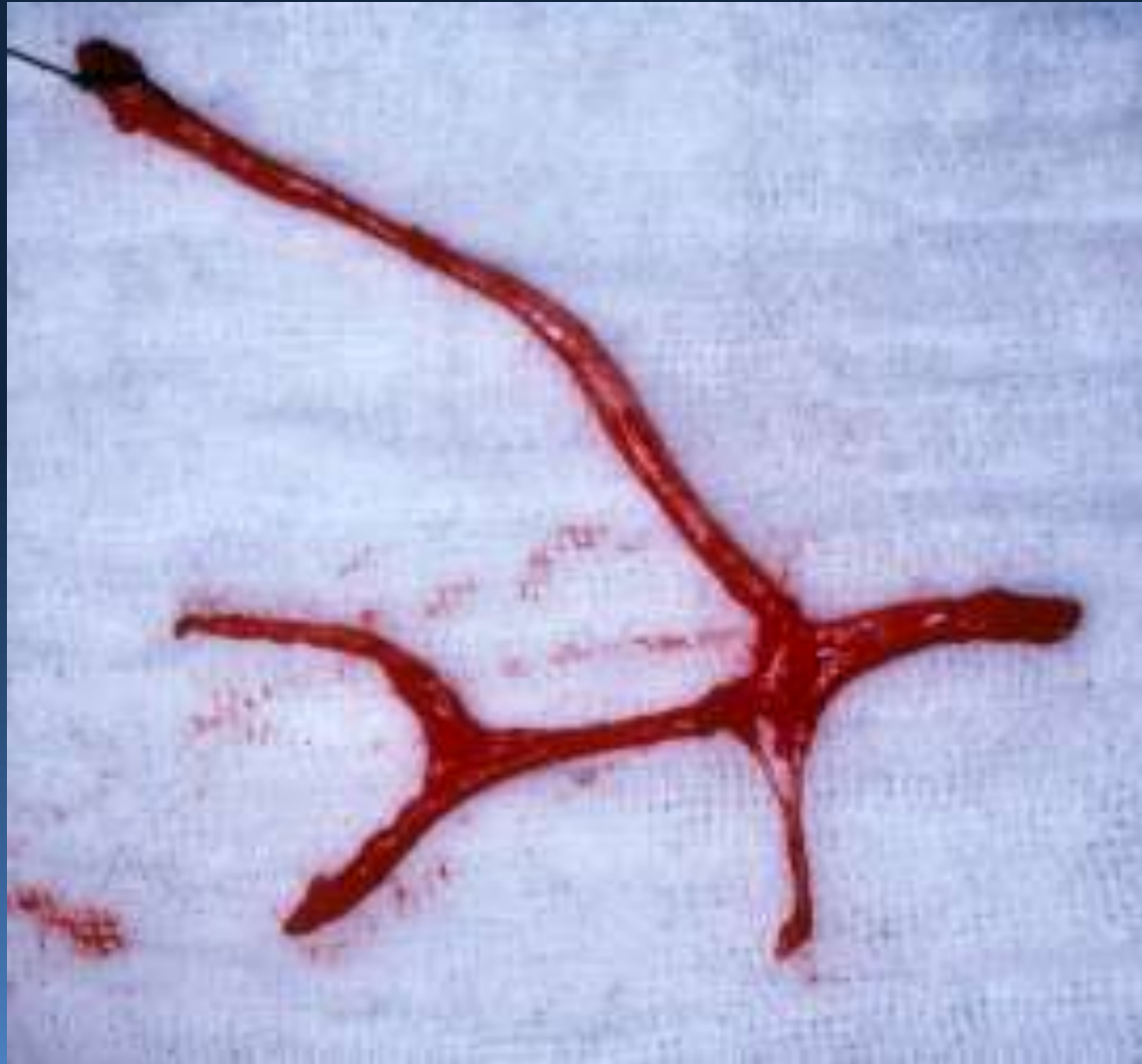
- Pre-op facial palsy
- Large tumor adherent to the nerve
- Direct tumor involvement into the nerve
- Recurrent malignant tumor



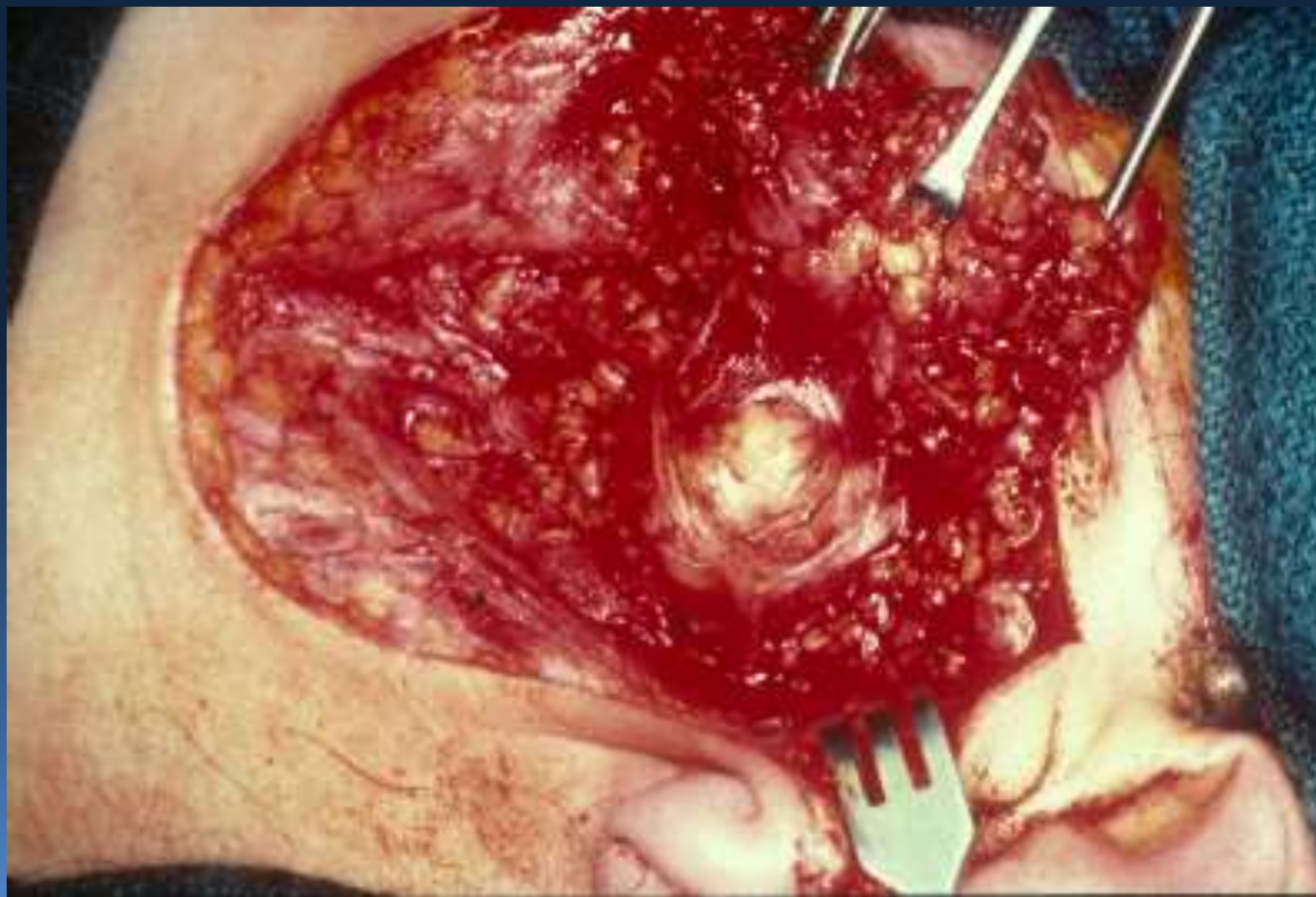
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Resection of Facial Nerve

- Nerve graft
- Great auricular nerve
- Ansa Cervicalis
- Sural nerve
- Nerve transfer-hypoglossal transfer
- Tarsorrhaphy
- Facial reanimation - facial slings



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Problem Areas in Salivary Tumors: Parotid Gland

- Deep lobe parotid tumors
- Accessory parotid tumors
- Regional node metastases
- Local recurrences
- Facial nerve?

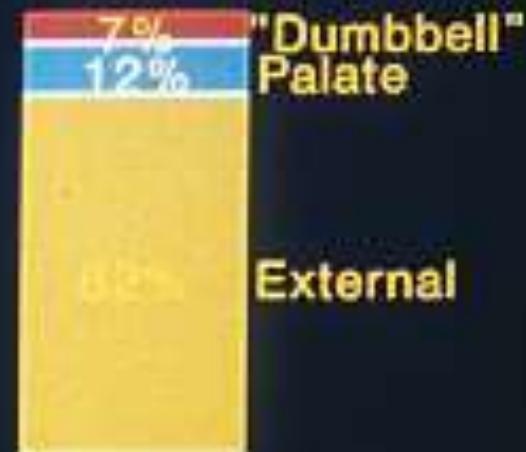




DEEP PAROTID TUMORS



INCIDENCE



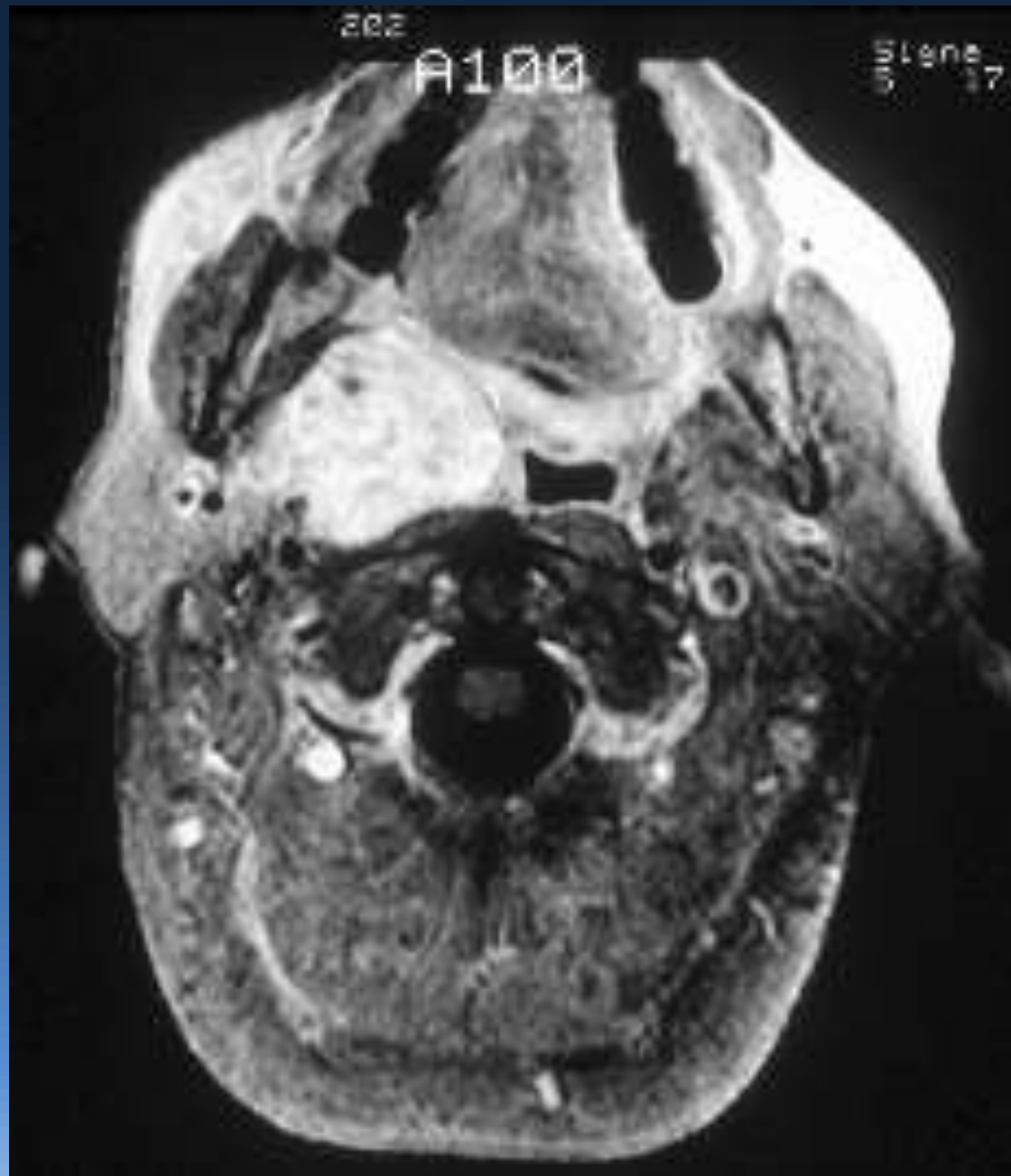
PRESENTATION

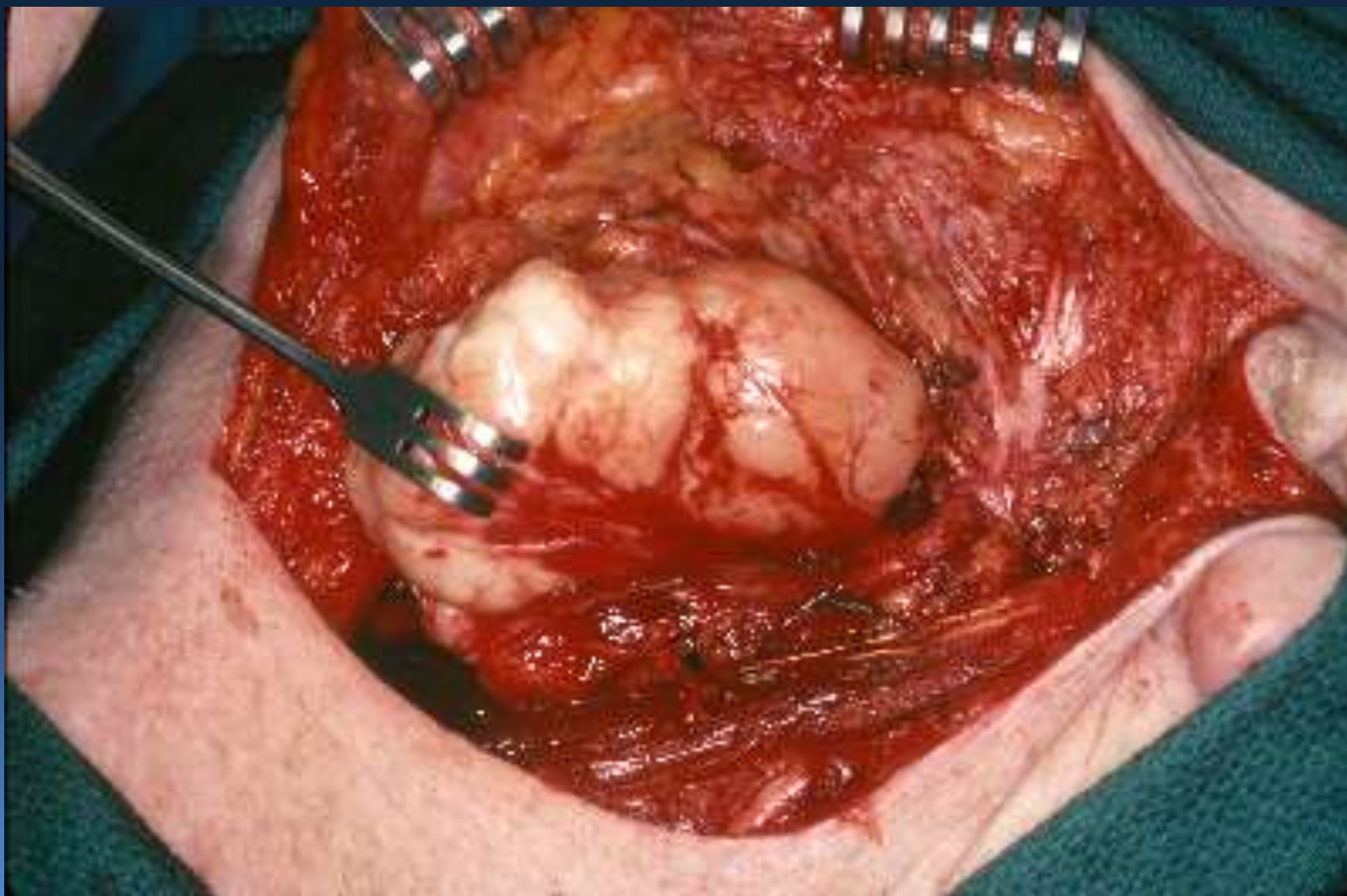
1875 Parotid Tumors/157 Deep: 1939-1968

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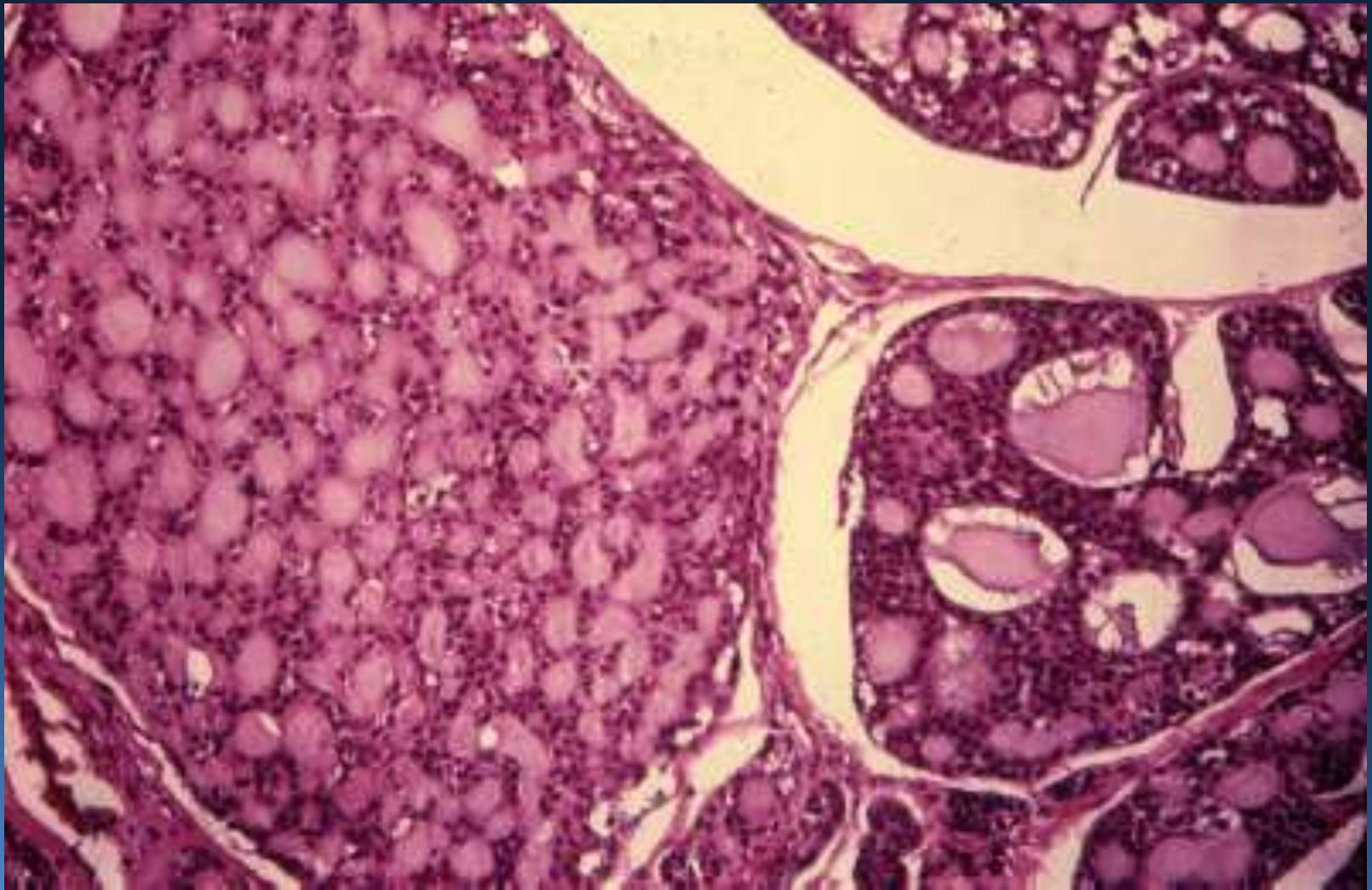


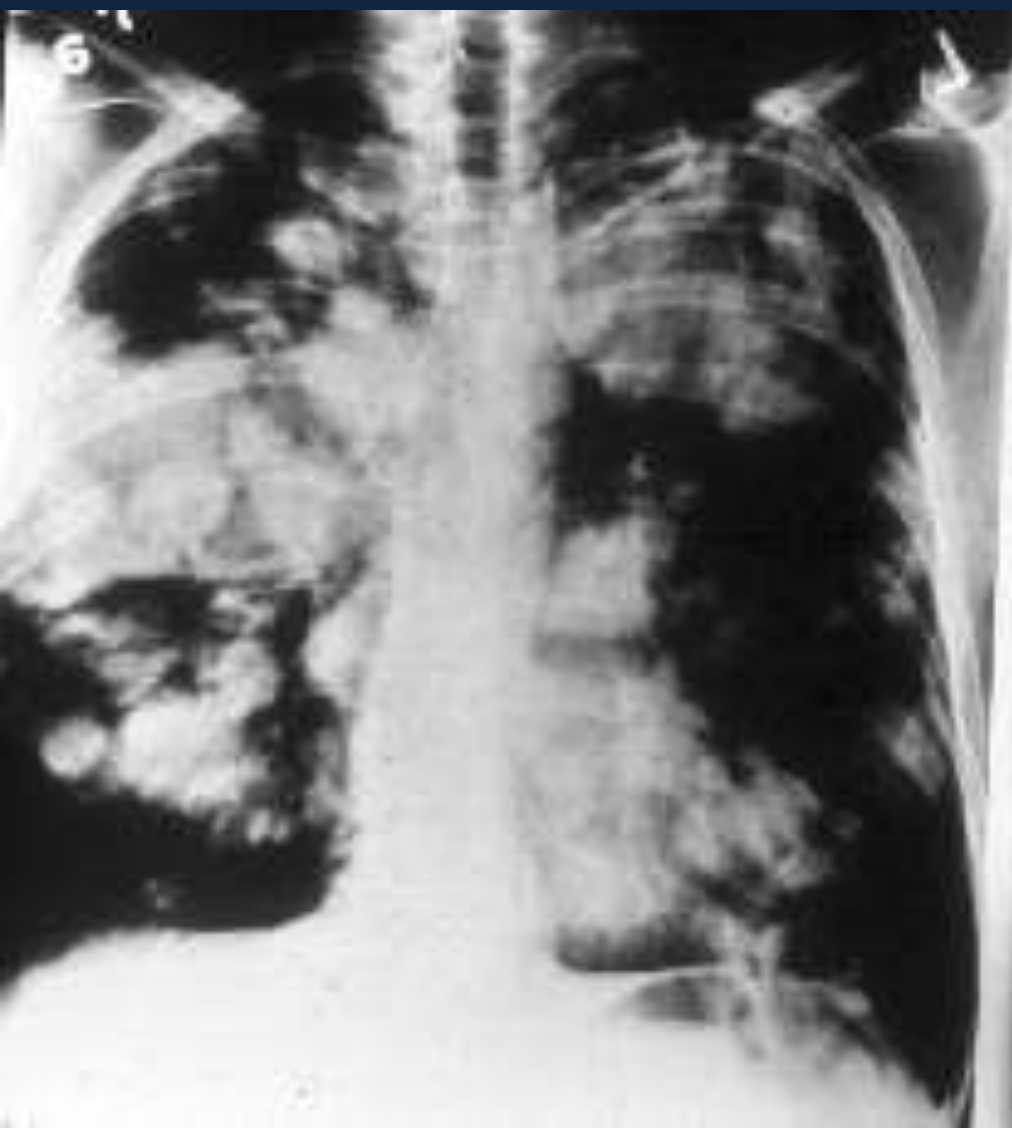
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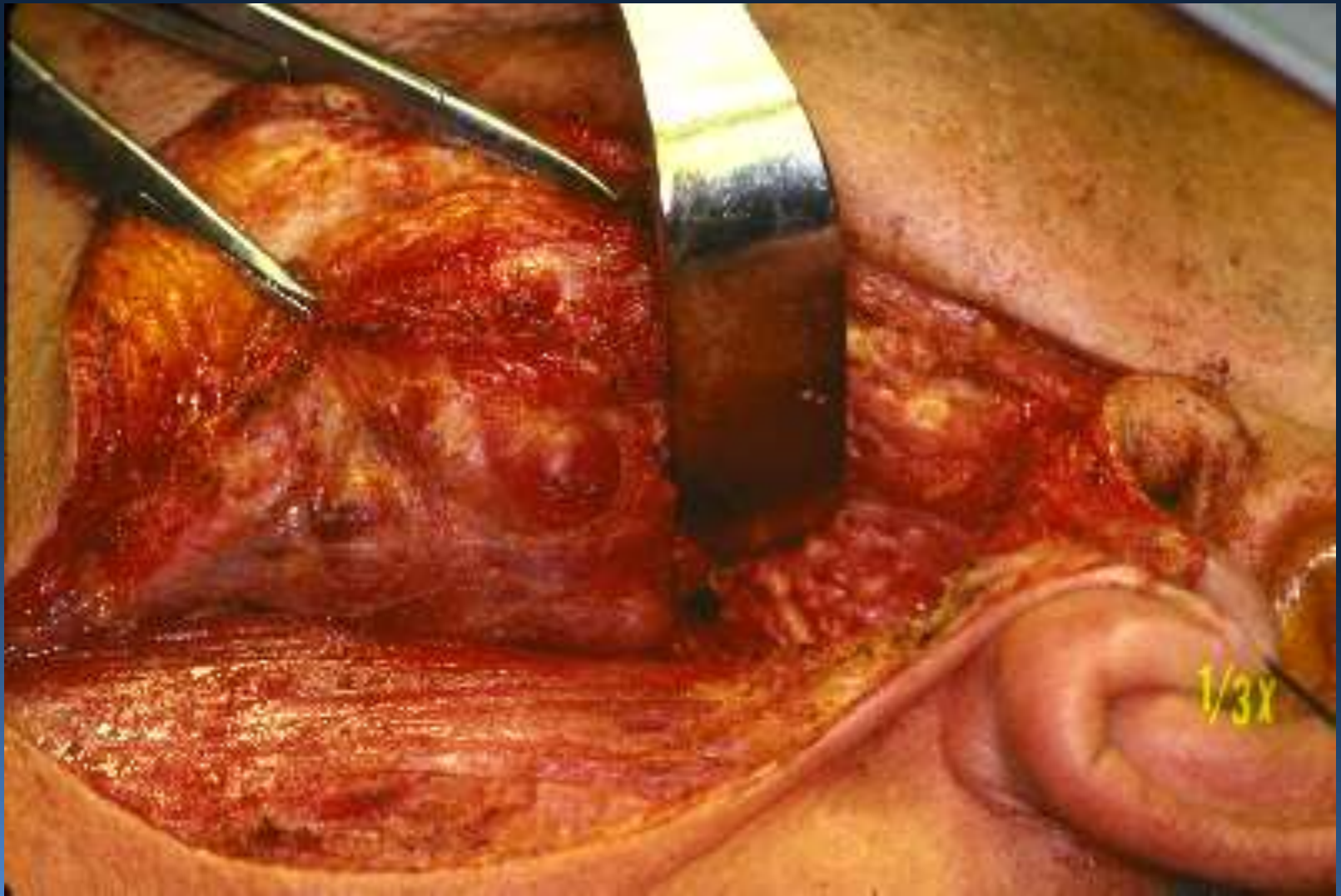


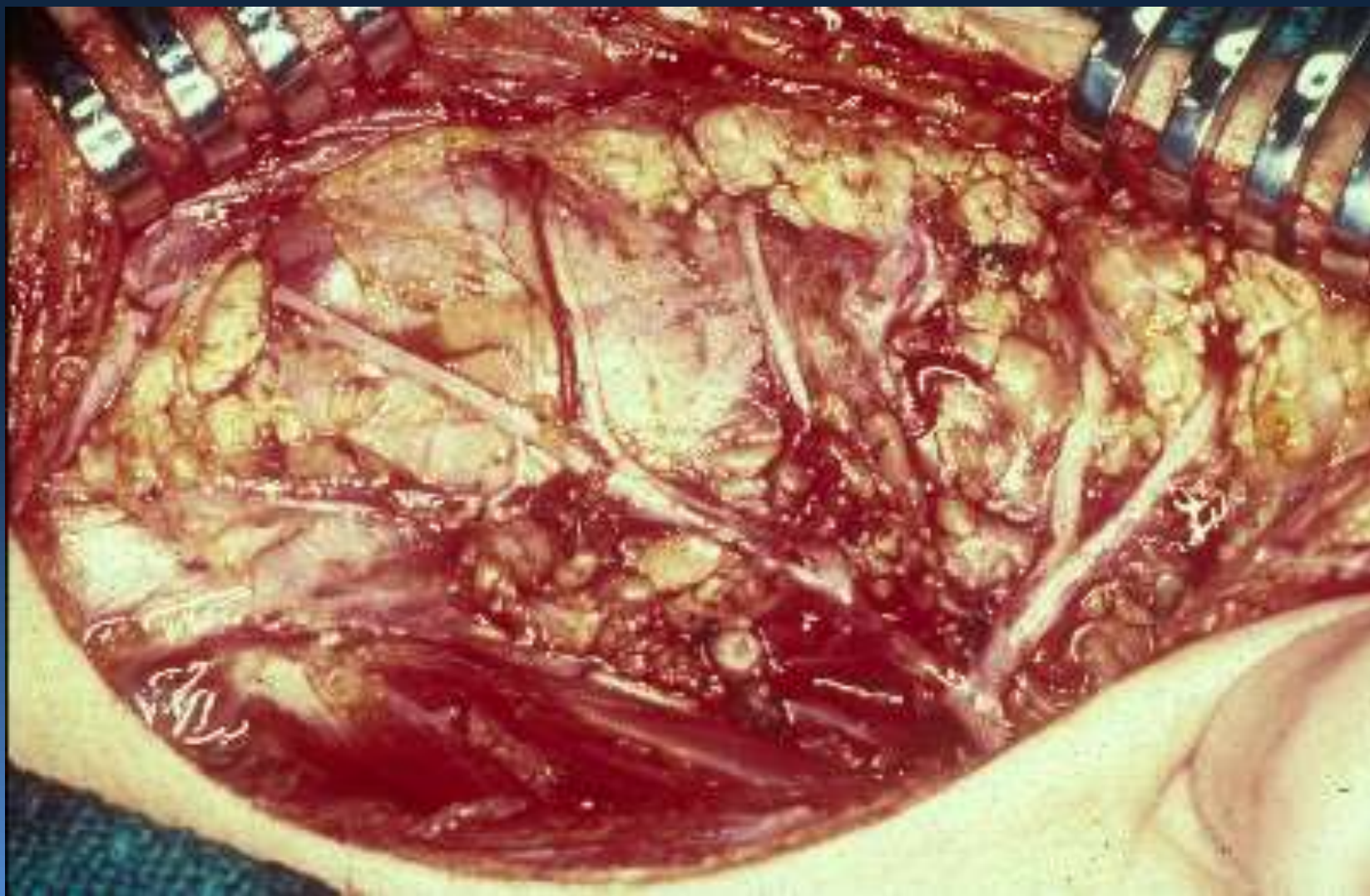


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Prognostic Factors

- Clinical Stage (TNM)
- Histological grade
- Age
- Gender
- Anatomical site
- Experience of the surgeon

Ca of the Parotid, MSKCC 1939-1968

Factors Influencing "Cure"

	Pts Eligible	NED	%
Cervical node metastasis:			
Never documented	213	157	74
Present on admission	57	5	9
Appeared later	18	3	17
Local recurrence*:			
No	194	153	79
Yes	71	15	21

*No data or palliation only in 23

Ca of the Parotid, MSKCC 1939-1968

Factors Influencing "Cure"

	Pts Eligible	NED	%
Stage of primary:			
I	104	88	85
(92)*			
II	83	57	67 (75)
III	99	19	19 (20)
Facial nerve status:			
Function intact	212	139	66
Partial/complete palsy	43	6	14
Not recorded	31	18	58
Unrelated dysfunction	2	2	100

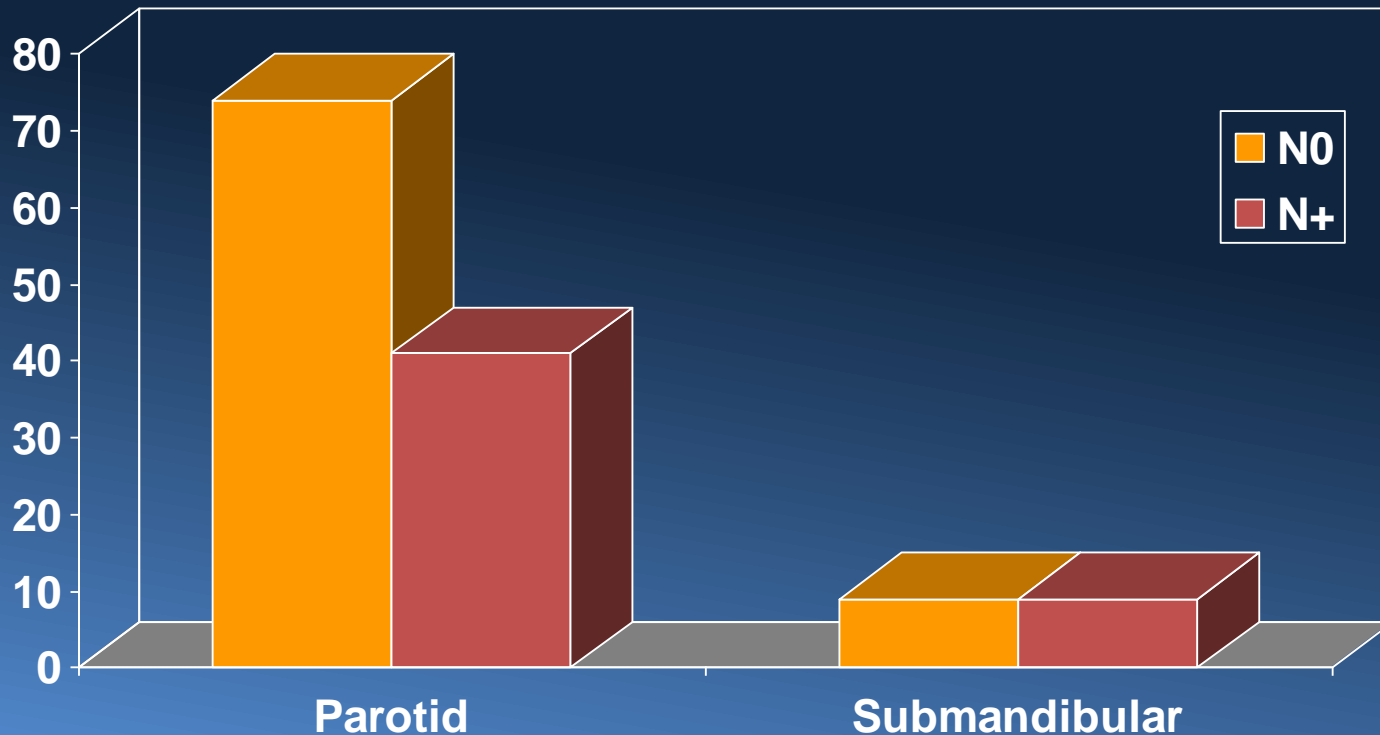
Major Salivary Ca 1939-1982

Node Metastasis (26%)

	# Pts*	Nodes +
Anaplastic	6	5 (83%)
Squamous	26	15 (58%)
Mucoep grades 2,3	123	54 (44%)
Adenocarcinoma	46	18 (39%)
Malig mixed	62	12 (19%)
Adenoidcystic	50	4 (8%)
Acinic cell	56	4 (7%)
Mucoep grade 1	68	2 (3%)

*439 determinate pts

Cancer of the Major Salivary Glands: Nodal Status & 5 Yr Survival



Elective Neck Treatment in Salivary Gland Cancers

- High grade tumors
- T3 (?) & T4 tumors
- Tumors >3 cm
- Facial paralysis
- Age >54
- Extraparotid extension
- Perilymphatic invasion



Elective
neck
treatment

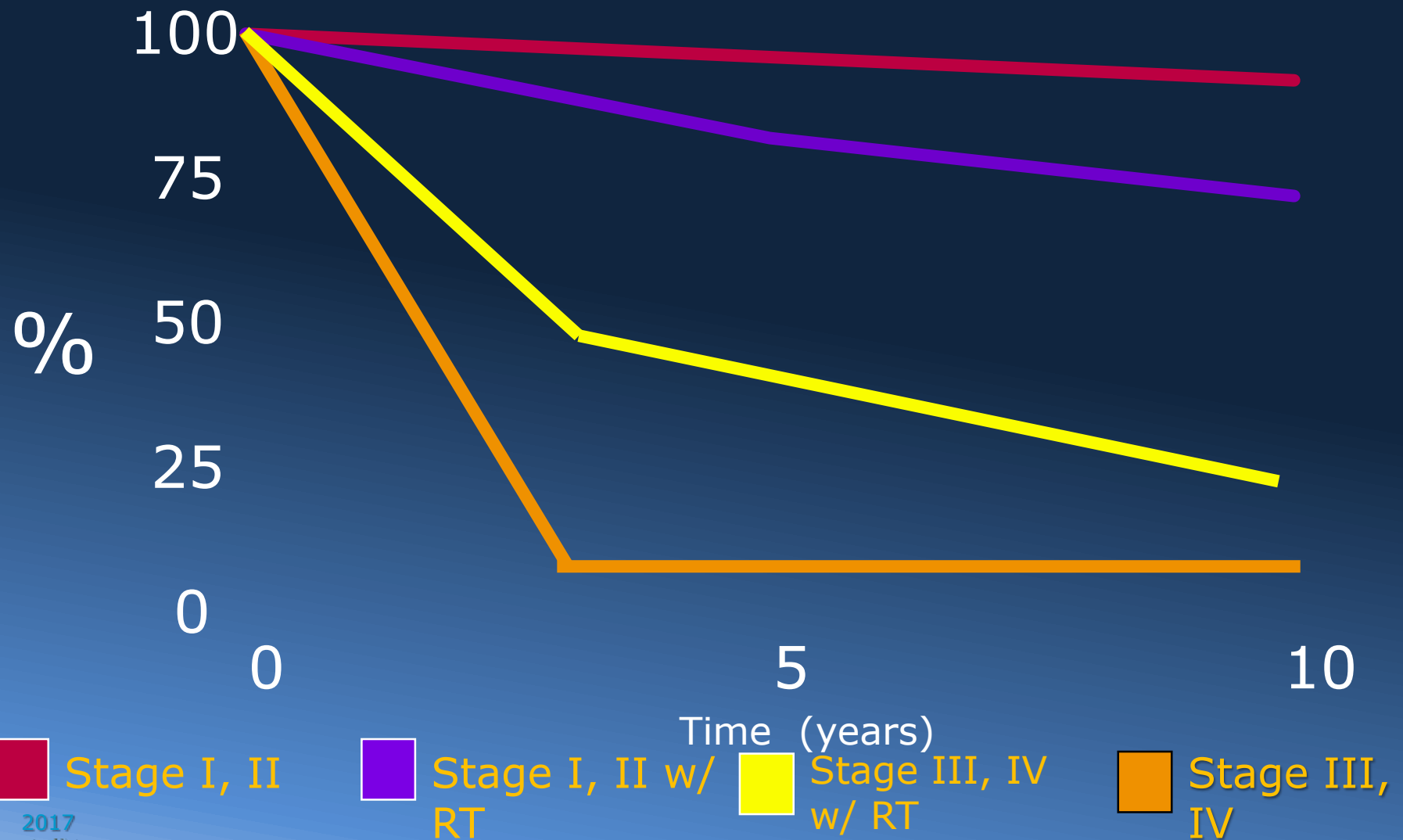
Management of the Neck in Parotid Cancer

Elective neck dissection should be reserved for those histologic diagnoses having the highest risk of nodal metastases plus selected patients whose primary tumor resection may be facilitated by Lymphadenectomy.

Indications for Postoperative Irradiation-Parotid Cancer

- Aggressive, highly malignant tumors
- Invasion of adjacent tissues outside parotid capsule
- Regional lymph node metastases
- Deep lobe cancers
- Gross residual tumor following resection
- After resection recurrent tumor
- Tumor invasion of facial nerve

Salivary Ca. - Impact of Post-op R.T. on Survival



Adjuvant Radiotherapy: Impact on Prognosis

Survival	Surg Alone	Surg+RT
Stage I/II	96	82
Stage III/IV	10	51
Lymph node mets	19	49
High-grade tumors	28	57
Overall	55	69

Local control	Surg Alone	Surg+RT
Stage I/II	79	91
Stage III/IV	17	51
Lymph node mets	40	69
High-grade tumors	44	63
Overall	66	73

Salivary Carcinoma - Survival by HISTOLOGY



Acinic cell



Muco ep. Gr II - III



MMT



Squamous or Anaplastic ca



Muco ep. Gr I

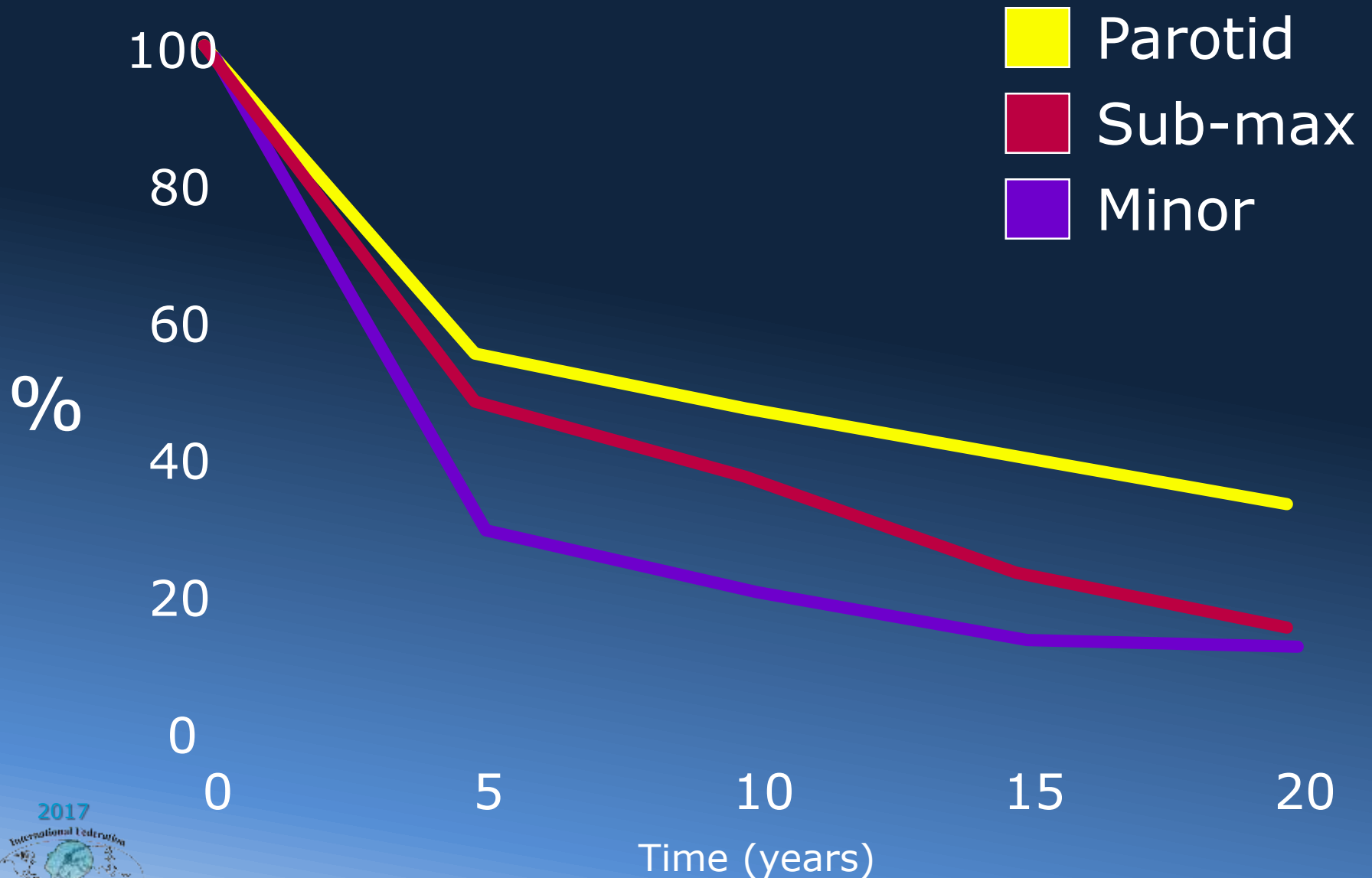


Adeno Ca.

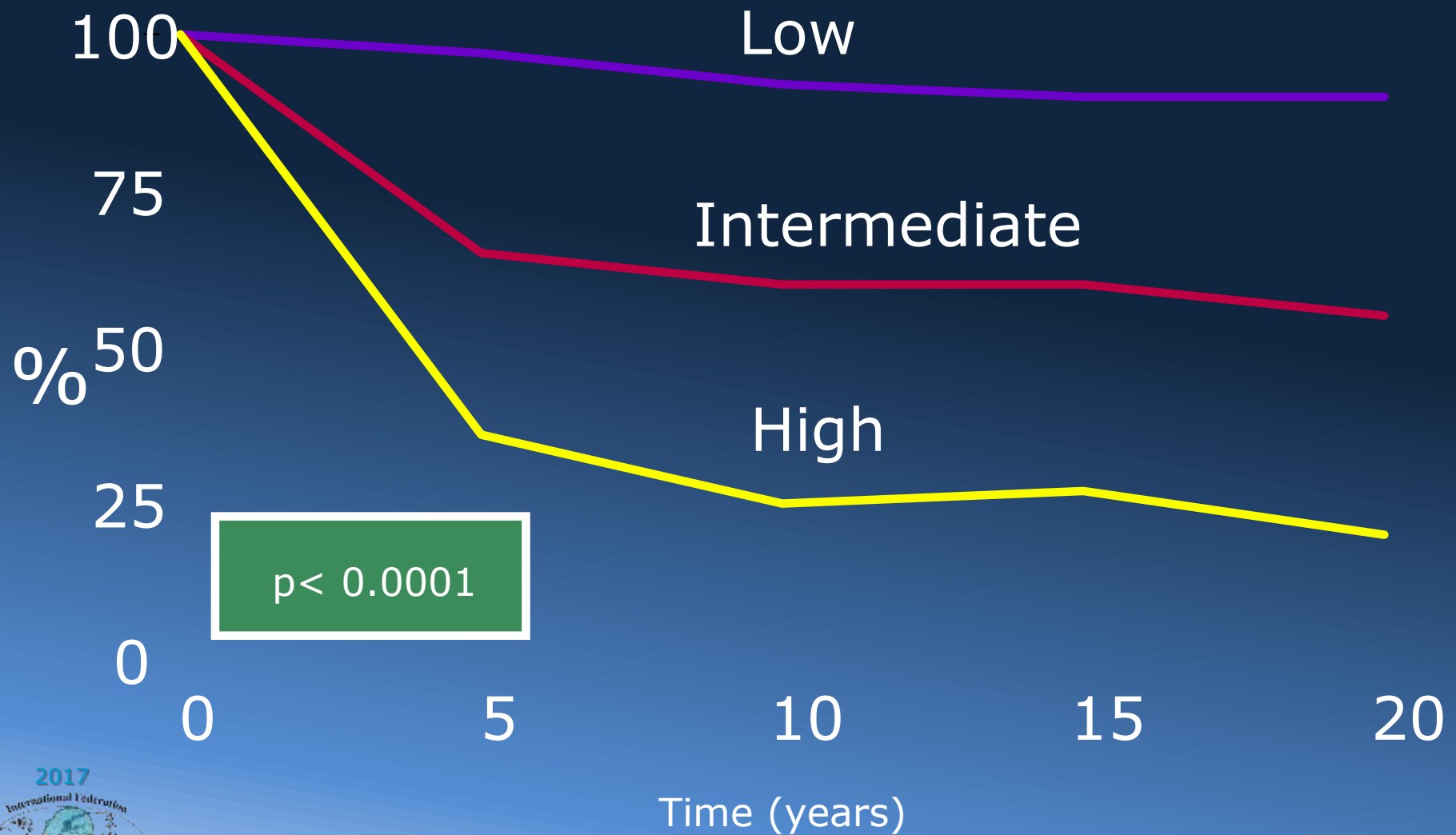


Adenoid cystic

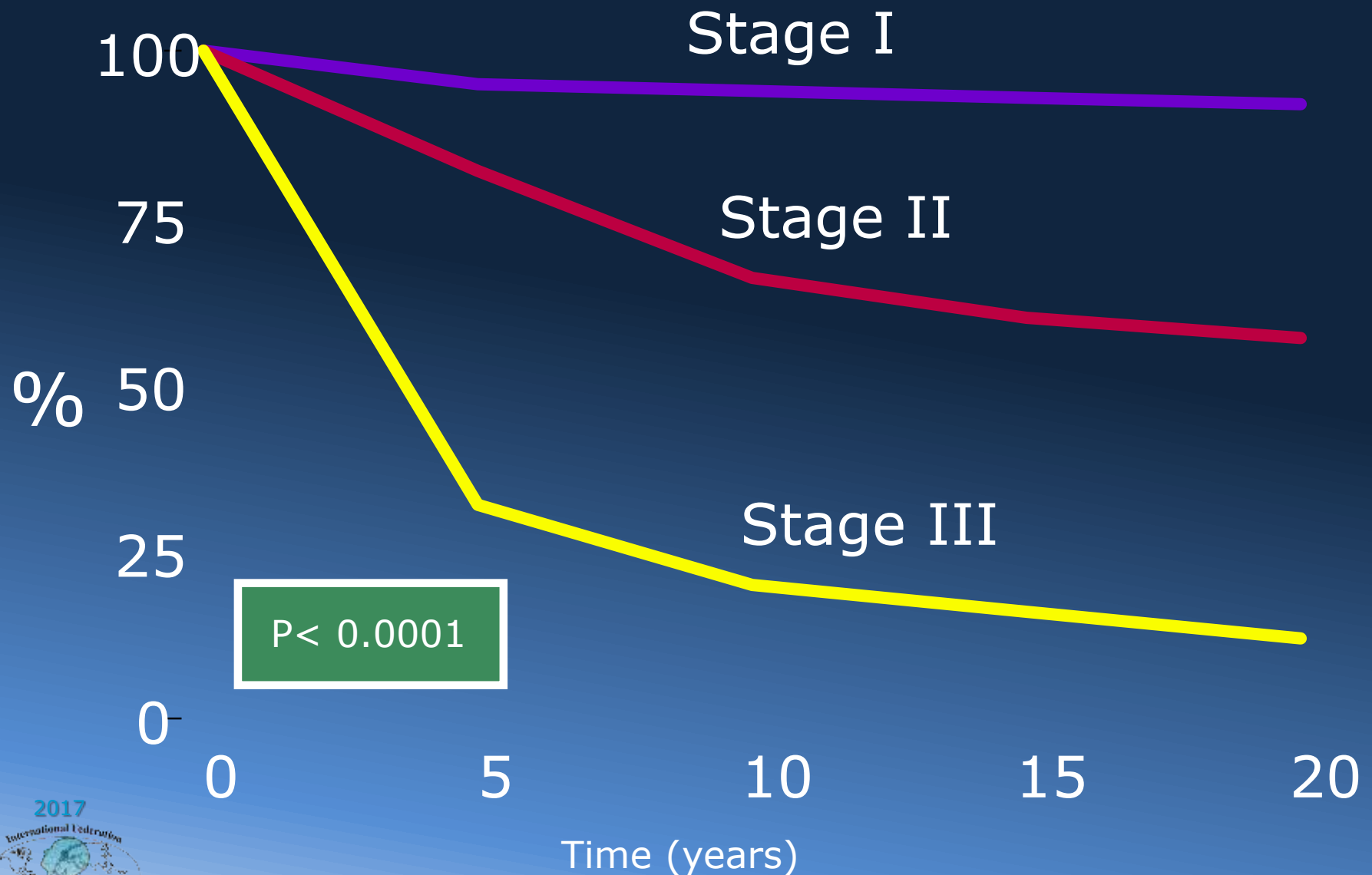
Salivary Carcinoma - Survival by SITE



Salivary Carcinoma - Survival by GRADE



Salivary Carcinoma - Survival by STAGE



Prognostic Factors in Salivary Gland Cancer



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Important Prognostic Factors in Salivary Tumors

- Age at diagnosis
- Pain at presentation
- T stage
- N stage
- Skin invasion
- Facial nerve dysfunction
- Perineural growth
- Positive surgical margins
- Soft tissue invasion
- Treatment type

Radiation Therapy: Fast Neutron Radiation

- Available in few centers
- High LET radiation
- RBE especially high for adenoid cystic ca
- Uncertain benefit in completely resected vs conventional photon RT
- Definite advantage residual, recurrent unresectable disease

Fast Neutrons as Treatment for Salivary Gland Carcinoma*

- 53 pts (24 gross resid p.o.; 13 inop; 16 rec p.o.)
- Locoreg control in Rx field in 48 (>90%)
- ACC = 14 pts (42 mos med f/u – min 1 yr)
- Actuarial 5 yr survival 33% (42% No)
- 17% serious acute complic (Incl 1 death)

Salivary Tumors Molecular Biology

- Warthin's tumor showed low SPF+G₂M and low Ki67
- Pleomorphic adenoma showed low SPF+G₂M and high Ki67
- Malignant tumor showed high SPF+G₂M and high Ki67
- MIB 1 and PCNA immunohistochemistry may help distinguish benign/low grade/ACC

Salivary Diseases

- Outpatient parotidectomy
- Extracapsular Dissection
- Needle biopsy
- Sialoendoscopy
- Sialocholithotomy
- Molecular markers
- Radiation therapy

Salivary Gland Carcinoma Rx Principles

- Adequate local excision of tumor based on extent of the primary
- Preserve the nerve, if possible
- Elective neck dissection reserved for selected patients
- Post-operative radiotherapy when indicated (appropriate fields)
- Most important prognostic factors: stage & grade

“In seventh nerve paralysis, joy, happiness, sorrow, shock, surprise, all the emotions have for their common expression the same blank stare.”

Sterling Burnell, 1927