The Milan System for Reporting Salivary Gland Tumours at SaTH

Journal of the American Society of Cytopathology (2018) 7, 111–118

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SPECIAL ARTICLE

The Milan System for Reporting Salivary Gland Cytopathology (MSRSGC): an ASC-IAC–sponsored system for reporting salivary gland fine-needle aspiration

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What's the need?

- SG-FNA is established
  - Easy in outpatients to diagnose preoperatively
  - Identifies many benign neoplasms
  - Usually distinguishes low/high grade malignancy
- Accurate for common neoplasms
  - E.g. Warthin's/PA
  - But overall specificity is between 48-94%
  - Sensitivity is 86-100%

Why?

- Cytological overlap with several low grade neoplasms
  - Ancillary studies can help
  - Still a subset where cytological morphology alone cannot lead to a diagnosis
- Challenges for clinicians regarding how to manage these patients

Expected benefits?

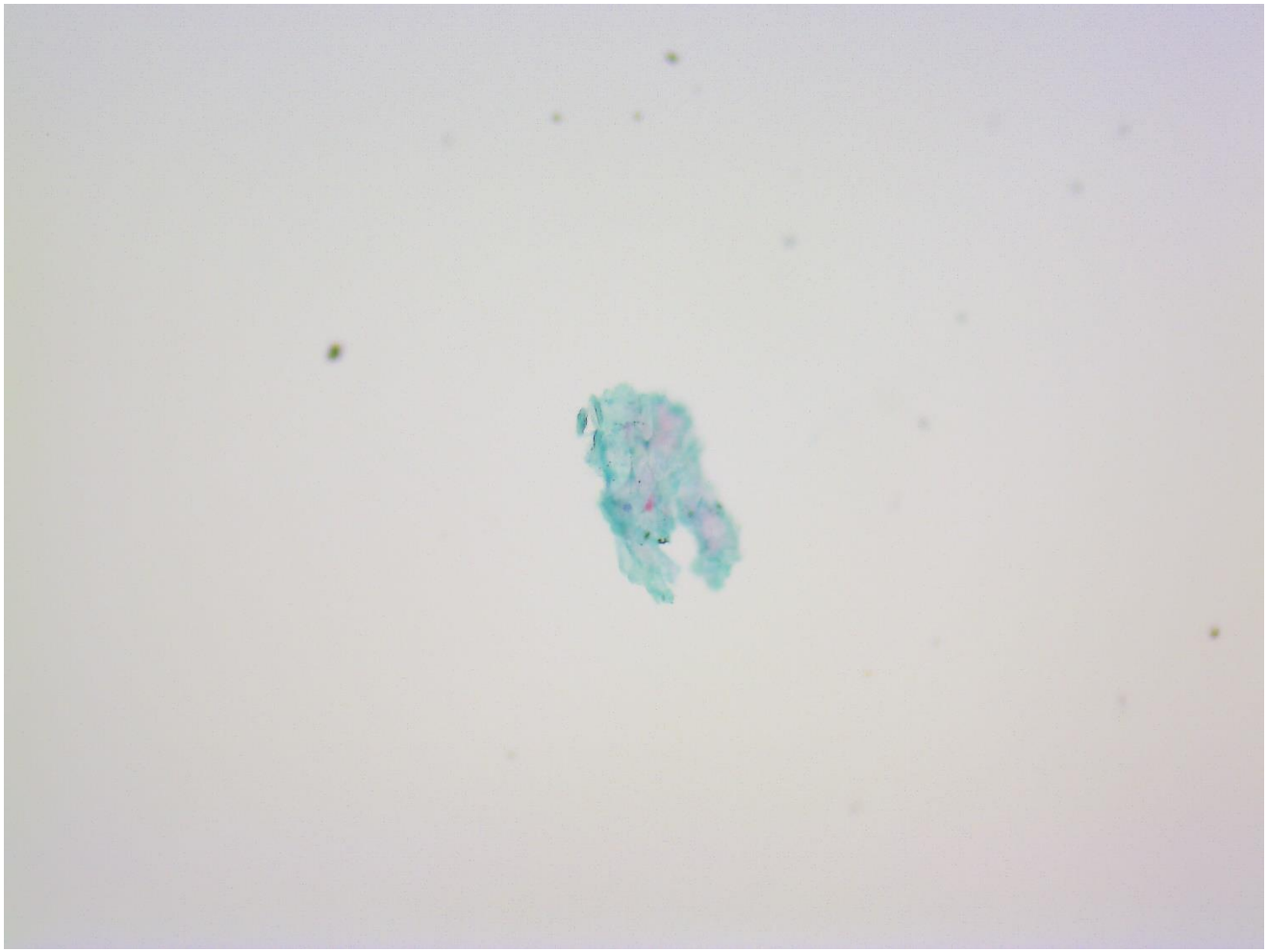
- Classification systems emphasise risk stratification
  - May streamline patient management/choice
  - Provides a risk of malignancy within each category
- Improved clarity and reproducibility

- The overall aim
  - Improving effective communication between pathologist and clinician
  - Ultimately improve patient care

Categories

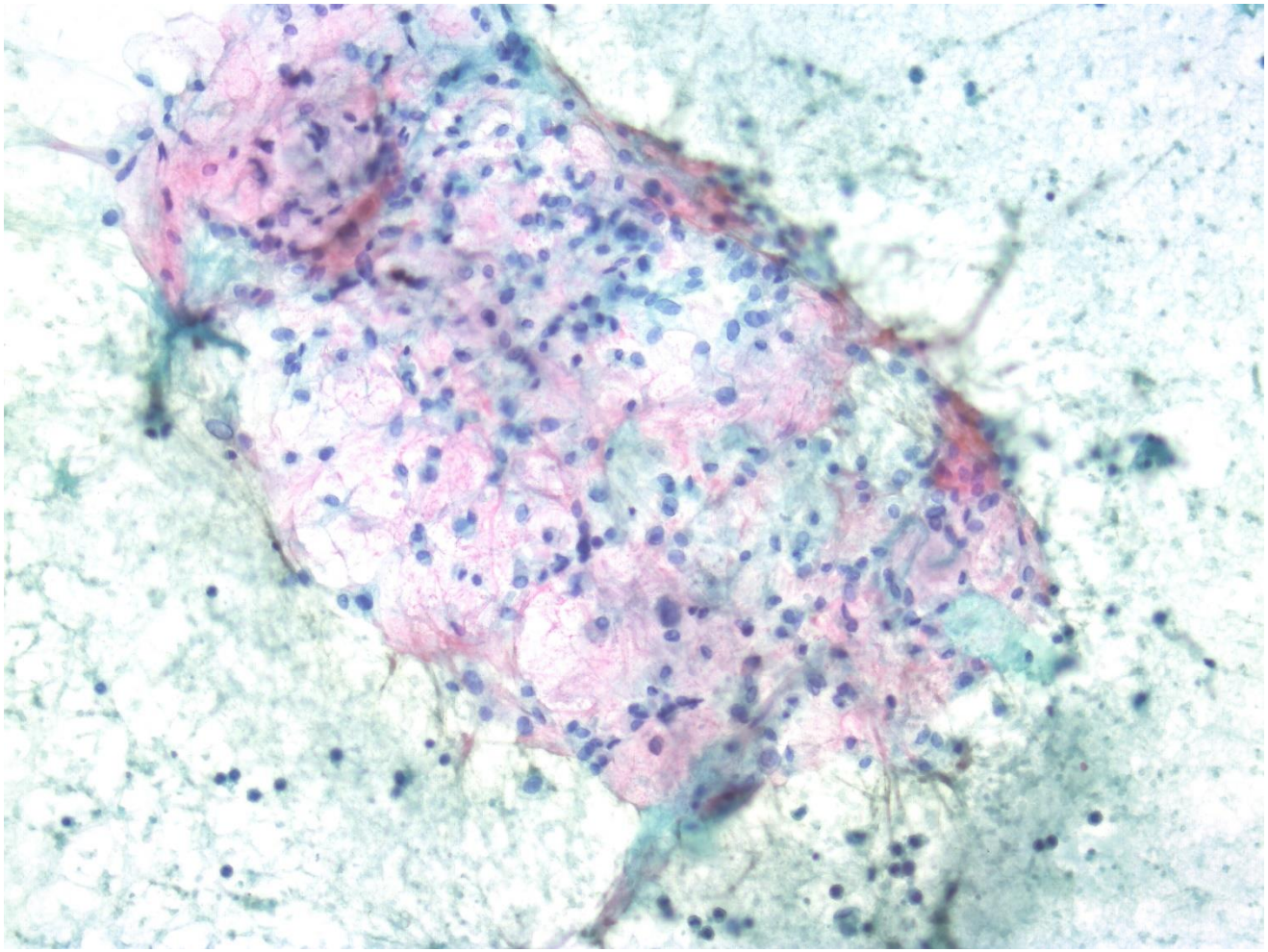
MILAN CATEGORY	CATEGORY MEANING	% ROM
I	Non-diagnostic	25
II	Non-neoplastic	10
III	Atypia of undetermined significance	20
IVA	Benign neoplasm	<5
IVB	Salivary gland neoplasm of uncertain malignant potential (SUMP)	35
V	Suspicious for malignancy	60
VI	Malignant	>90

I – Non-diagnostic



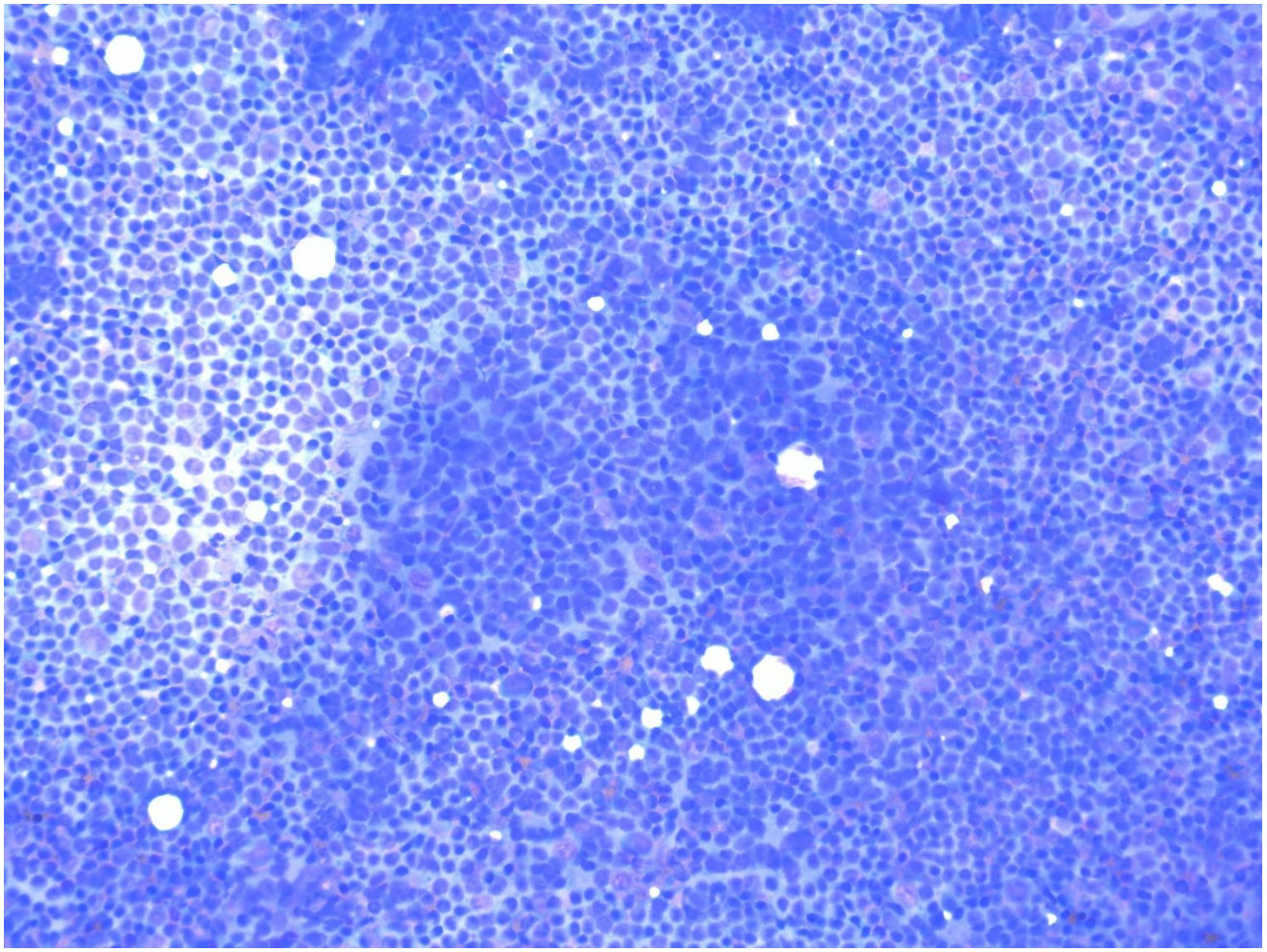
Self explanatory…

II – Non-neoplastic



Normal components present in this instance

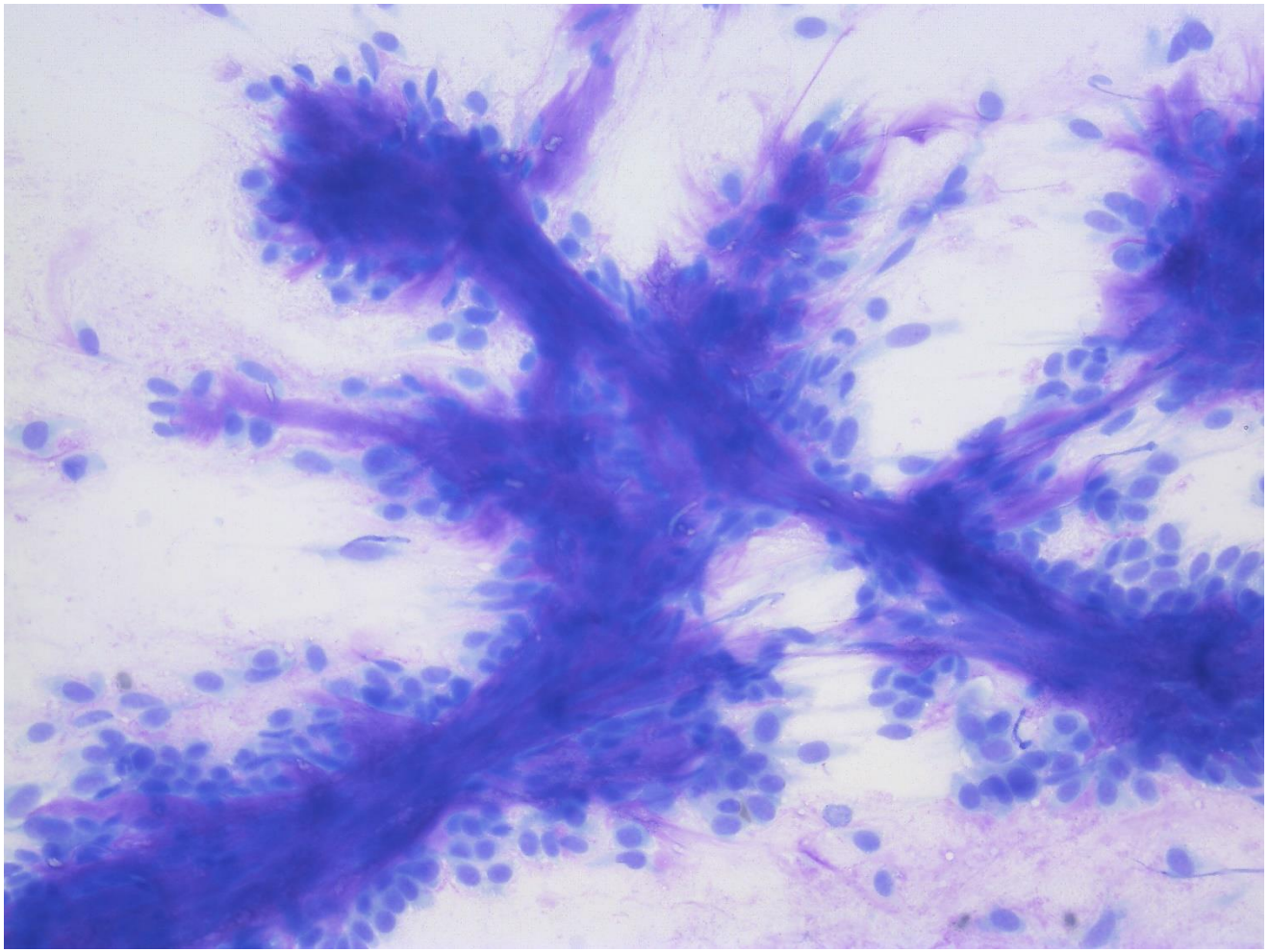
III - AUS



Can’t exclude low-grade lymphoma

Histology was grade 1 follicular lymphoma

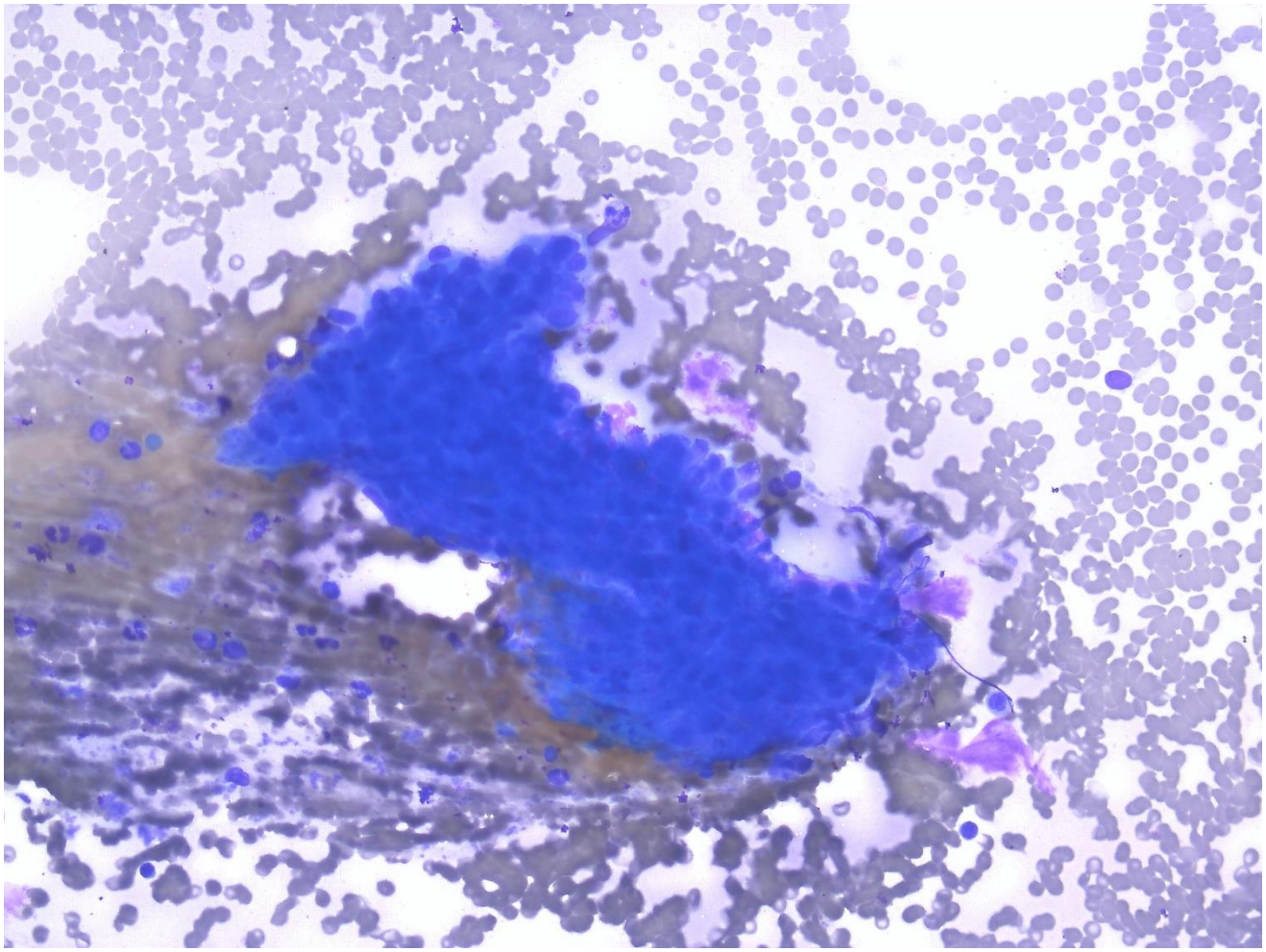
IVA – Benign neoplasm



Recognisable features

Histology was a pleomorphic adenoma

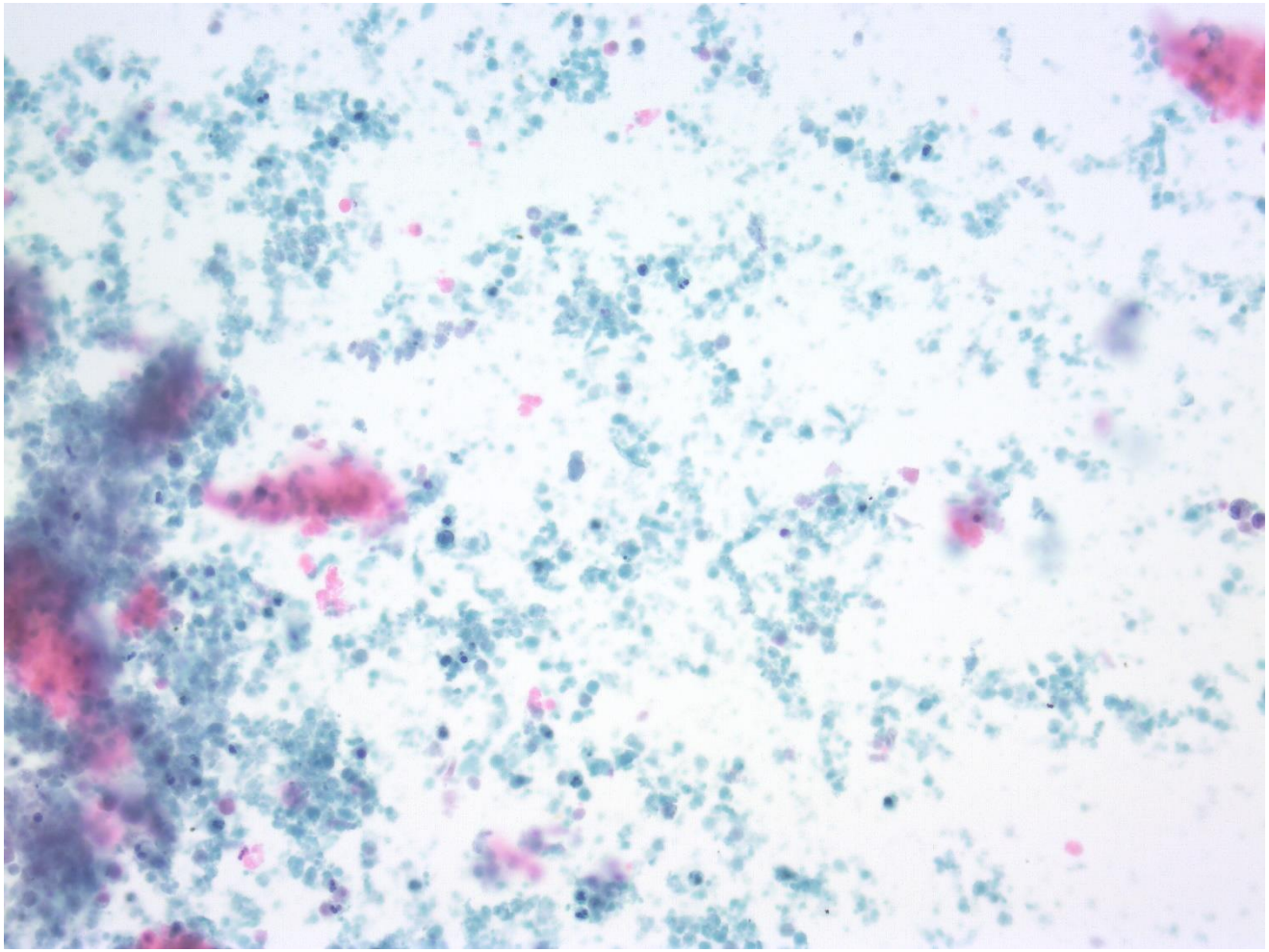
IVB - SUMP



Neoplasm, but no material available for ancillary studies

Histology showed polymorphous carcinoma

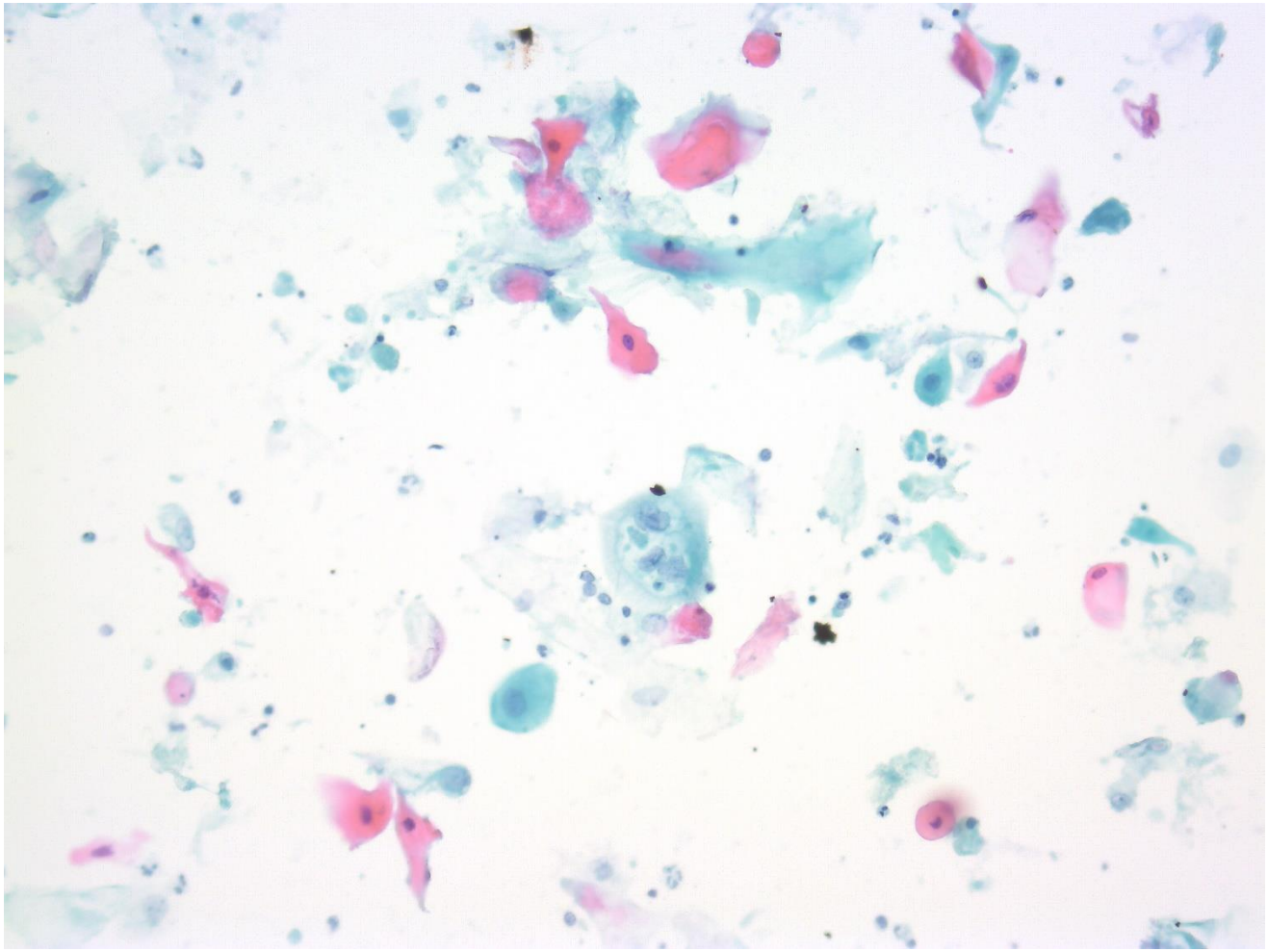
V - Suspicious



Debris and degenerate atypical cells.

Not enough present to be definite and nothing for ancillary studies

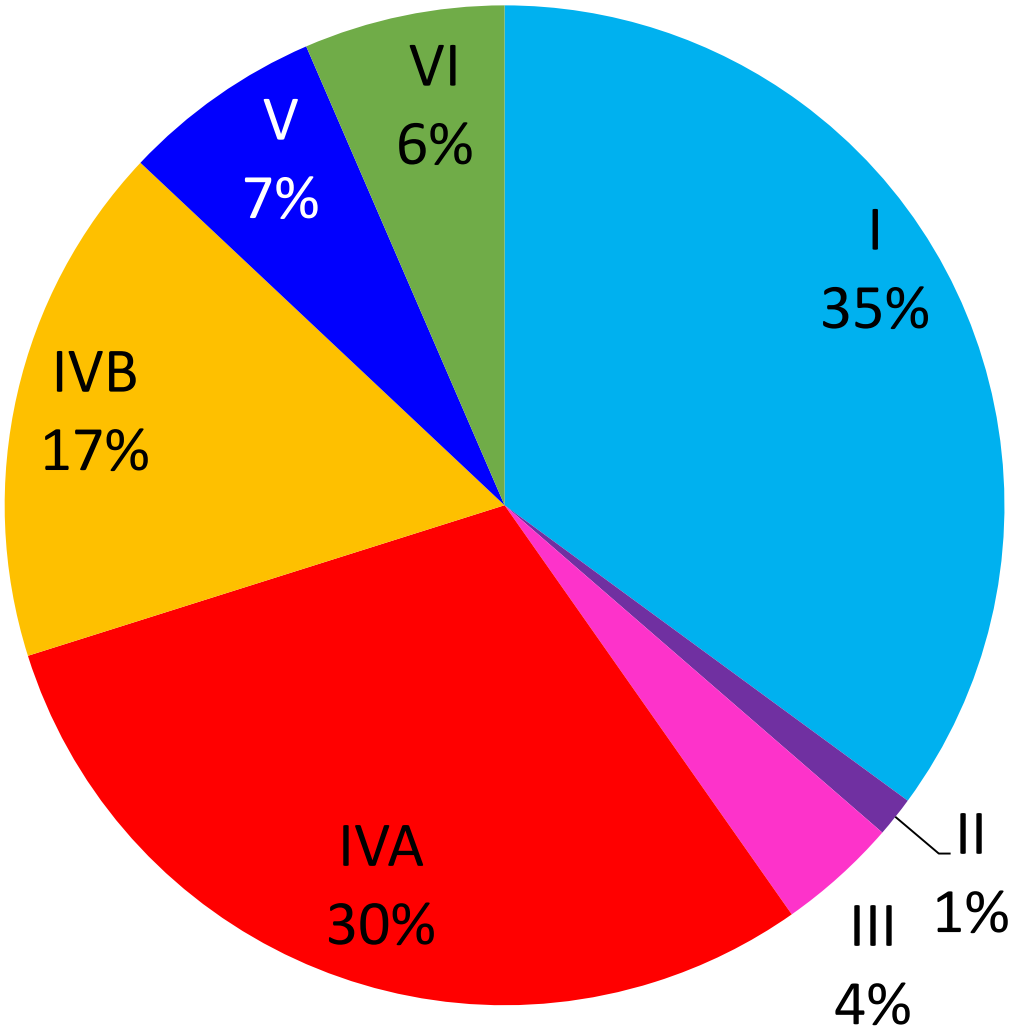
VI – Malignant



Methodology

- Retrospective audit
- 77 cases identified over 9 months
- ROM calculated using follow-up histology/clinic letters
- Management strategy identified using clinic letters

Proportion of cases in each Milan category
(n=77, 01/01/2018 to 30/09/2018)



I	27
II	1
III	3
IVA	23
IVB	13
V	5
VI	5
Total	77

Rosai *et al*. (2018)

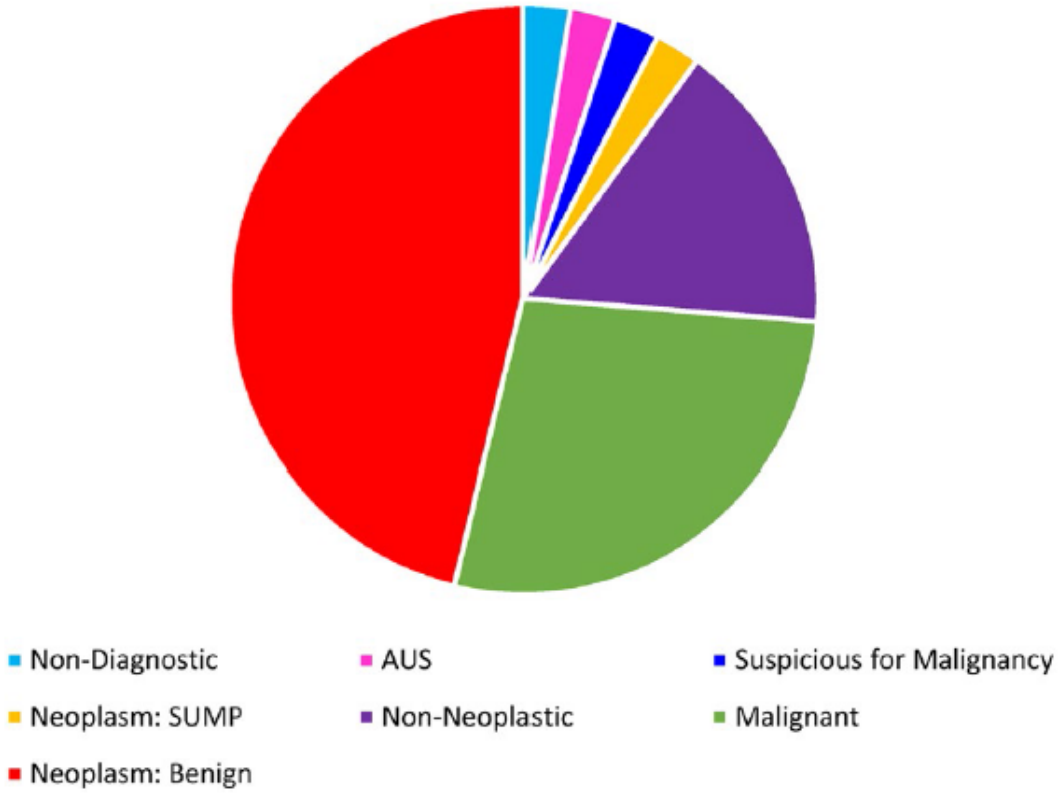
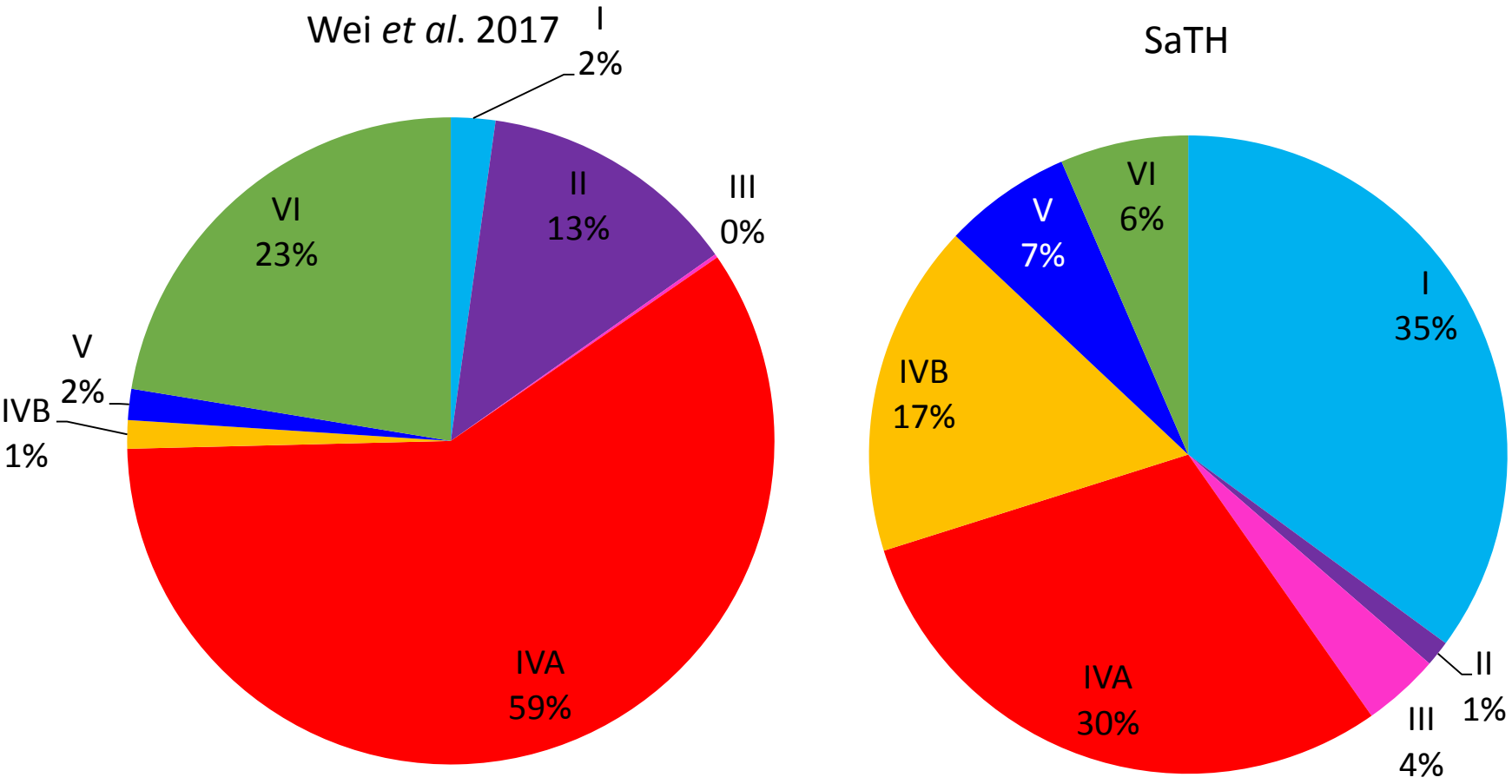
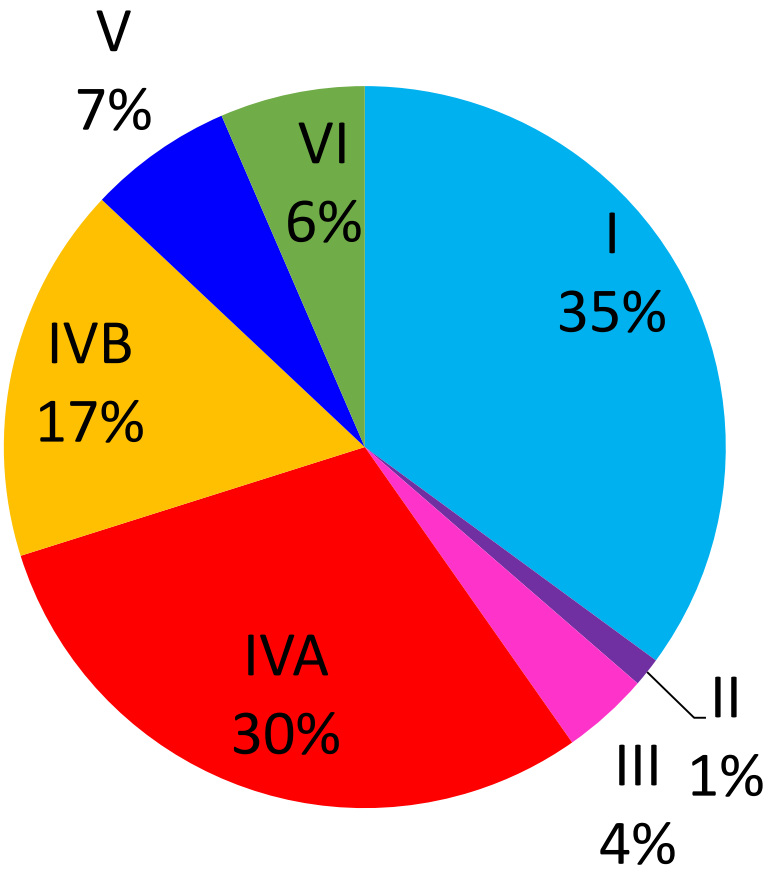


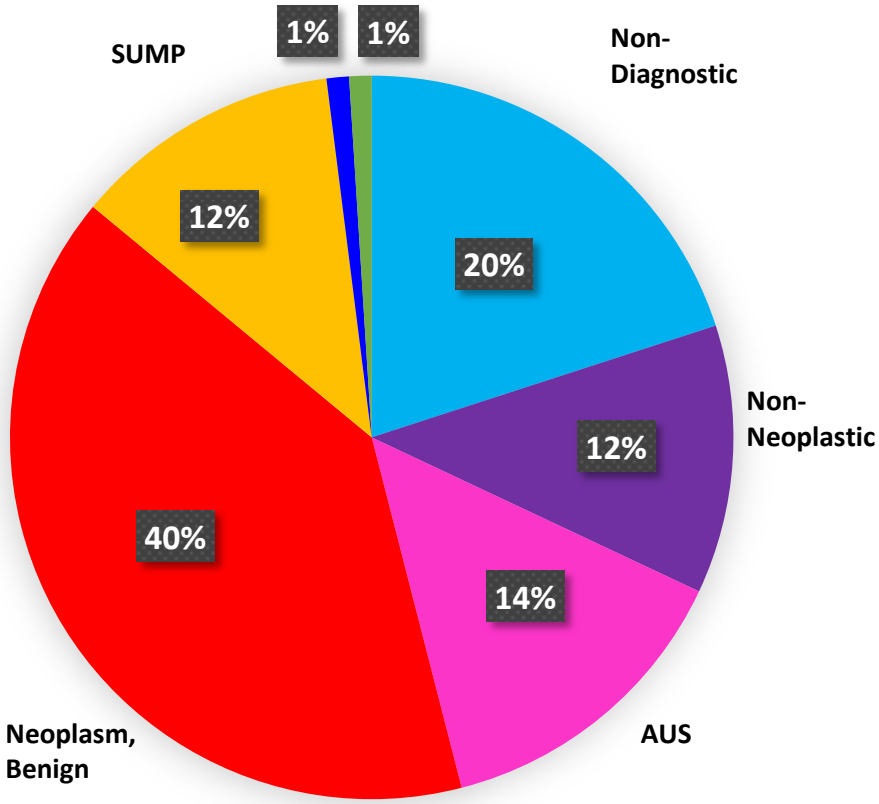
Figure 1. This chart illustrates the frequency of diagnostic categories in the Milan System for Reporting Salivary Gland Cytopathology, representing an approximation based on data from the literature. Actual frequencies are likely to vary, depending on individual institutions and patient populations. AUS indicates atypia of uncertain significance; SUMP, salivary gland neoplasm of uncertain malignant potential. Adapted from: Wei S, Layfield L, LiVolsi VA, et al. Reporting of fine needle aspiration (FNA) specimens of salivary gland lesions: a comprehensive review. *Diagn Cytopathol.* 2017;45:820-827.[7]


Wei *et al*. 2017
I
2%
II
13%
III
0%
VI
23%
V
2%
IVB
1%
IVA
59%
SaTH
VI
6%
V
7%
I
35%
IVB
17%
IVA
30%
II
1%
III
4%

Comparison to Glasgow

Proportion of cases in each Milan category (n=77, 01/01/2018 to 30/09/2018)





Adequacy

- This has already been audited within our trust
  - Heavily sampler dependent
  - 4 clinicians do FNAs (2 radiologists and 2 ENT surgeons)
  - Adequacy rate between 50.0% and 90.4%
- We don’t use rapid onsite evaluation

Our ROM vs Milan ROM

MILAN CATEGORY	PPV	n	Milan proposed ROM
I	8.00%	25	25.00%
II	0.00%	1	10.00%
III	33.33%	3	20.00%
IVA	0.00%	19	<5.00%
IVB	50.00%	12	35.00%
V	60.00%	5	60.00%
VI	100.00%	5	>90.00%
	Total	70	

Cases without definitive histology/clinical management excluded

What was the final histology?

MILAN CATEGORY	PPV	
I	8.00%	2 Warthins, 4 PAs, 2 oncocytomas, 1 sialdenitis, 1 SCC, 1 salivary gland carcinoma. 16 clinically managed.
II	0.00%	1 clinically managed.
III	33.33%	1 Warthins, 1 Lymphoma, 1 clinically managed.
IVA	0.00%	2 Warthins, 8 PAs, 9 clinically managed.
IVB	50.00%	2 sialadenitis, 3 Warthins, 1 PA, 2 polymorphous adenocarcinomas, 3 salivary duct carcinomas, 1 SCC.
V	60.00%	1 Warthins, 2 SCC, 1 Lymphoma, 1 clinically managed.
VI	100.00%	4 SCC, 1 melanoma.

Our ROM vs Others

TABLE 2. Comparison of the Risk of Malignancy (ROM) From the Milan System for Reporting Salivary Gland Cytopathology With the ROM From Recent Retrospective Studies

	ROM, %						
Category	Rohilla 2017[3]	Thiryavi 2018[23]	Liu 2018[4]	Hollyfield 2018[29]	Viswanathan 2018[30]	MSRSGC: Faquin and Rossi 2018[a]	SaTH
Nondiagnostic	—	8.5	—		6.7	25.0	8.00%
Non-neoplastic	17.4	1.6	—		7.1	10.0	0.00%
AUS	100.0	0.0	—	33.0	38.0	20.0	33.33%
Neoplasm-benign	7.3	1.9	27.6		5	<5.0	0.00%
Neoplasm-SUMP	50.0	26.7	24.1[1]	33.0	34.2	35.0	54.55%
Suspicious for malignancy	—	100.0	—		92.9	60.0	60.00%
Malignant	96.0	100.0	100		92.3	>90.0	100.00%

Abbreviations: AUS, atypia of undetermined significance; MSRSGC, Milan System for Reporting Salivary Gland Cytopathology; SUMP, uncertain malignant potential.

[a]This differed from the ROM for oncocytic neoplasms (20%).

Management Strategies
ASC-IAC sponsored proposal

TABLE 1. Correlation of the Milan System for Reporting Salivary Gland Cytopathology Diagnostic Categories With the Risk of Malignancy and Potential Clinical Management Strategies

Diagnostic Categories	ROM, %	Clinical and Radiologic Follow-Up	Repeat FNA	Application of Ancillary Studies	Surgery
Nondiagnostic	25.0	X	X		
Non-neoplastic	10.0	X		X	
AUS	20.0		X	X	X
Neoplasm-benign	<5.0	X		X	X
Neoplasm-SUMP	35.0			X	X
Suspicious for malignancy	60.0		X	X	X
Malignant	>90.0			X	X

Abbreviations: AUS, atypia of undetermined significance; FNA, fine-needle aspiration; ROM, risk of malignancy; SUMP, uncertain malignant potential.

(Rossi *et al*., 2018)

The management does largely correlate

Overall	70(/77 total)	90.91%
I	23	85.19%
II	1	100.00%
III	3	100.00%
IVA	23	100.00%
IVB	11	84.62%
V	4	80.00%
VI	5	100.00%

The cases that didn't correlate…

- 7 in total

- 2 of them are because of patient choice
- 4 managed following MDT discussion & consensus

- 1 case – neoplastic lesion raised as possibility (IVB)
  - Repeat FNA following MDT discussion
    - More certainty needed
    - Repeat showed evidence of neoplastic lesion (IVB)
  - Final histology was high grade salivary duct adenocarcinoma (pT2 pN2b)

Questions?

References

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- Rossi, E., Baloch, Z., Pusztaszeri, M. and Faquin, W. (2018). The Milan System for Reporting Salivary Gland Cytopathology (MSRSGC): an ASC-IAC–sponsored system for reporting salivary gland fine-needle aspiration. *Journal of the American Society of Cytopathology*, 7(3), pp.111-118.

- Wei, S., Layfield, L., LiVolsi, V., Montone, K. and Baloch, Z. (2017). Reporting of fine needle aspiration (FNA) specimens of salivary gland lesions: A comprehensive review. *Diagnostic Cytopathology*, 45(9), pp.820-827.