

Agreement and Reproducibility in the Re-diagnosis of Serrated Polyps

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Introduction

- Serrated polyps (SPs) fall into two categories: Hyperplastic polyps (HPs) and sessile serrated polyps (SSPs).
- HPs lack precancerous potential while SSPs are precancerous, but between the two they are difficult to diagnose histologically.
- Inaccuracy in SP diagnosis can lead to incorrect colonoscopy surveillance recommendations.

Aim

- Quantify the frequency of diagnostic change of SPs and diagnostic agreement by presenting previously diagnosed SPs to a panel of GI pathologists.

Methods

- Polyp pathology data was utilized from a colonoscopy quality database on colonoscopies performed from 2012-2020.
- 167 polyps, either HP or SSP, was selected for analysis based on previous histology, size, and location.
- Polyp specimens underwent independent re-diagnosis from a five member GI pathology team, their experience ranging from fellow to experienced attending.
- Statistical analysis was performed using SPSS. Kappa analysis was performed for inter-observer agreement. Kappa values were grouped as poor (<0.2), fair (0.21-0.40), moderate (0.41-0.60), good (0.61-0.80), and perfect (>0.80).



Pathologist	Number of polyps diagnosed	Number of agreeing diagnoses
Pathologist A	102	84 (82.4%)
Pathologist B	78	57 (73.1%)
Pathologist C	163	122 (74.8%)
Pathologist D	162	125 (77.2%)
Pathologist E	19	12 (63.2%)

Pathologist	Original Dx of HP	Re-Dx as SSP	Re-Dx as HP	Re-Dx as TSA	Re-Dx as normal
Pathologist A	67	10 (14.9%)	51 (76.1%)	3 (4.5%)	3 (4.5%)
Pathologist B	49	5 (10.2%)	39 (79.6%)	2 (4.1%)	3 (6.1%)
Pathologist C	108	23 (21.3%)	75 (69.4%)	4 (3.7%)	6 (5.6%)
Pathologist D	107	18 (16.8%)	83 (77.6%)	5 (4.7%)	1 (0.9%)
Pathologist E	11	4 (36.4%)	7 (63.6%)	0	0

Pathologist	Original Dx of SSP	Re-Dx as SSP	Re-Dx as HP	Re-Dx as TSA	Re-Dx as normal
Pathologist A	35	33 (94.3%)	1 (2.9%)	0	1 (2.9%)
Pathologist B	29	18 (62.1%)	9 (31.0%)	2 (6.9%)	0
Pathologist C	55	47 (85.5%)	7 (12.7%)	0	1 (1.8%)
Pathologist D	55	42 (76.4%)	10 (18.2%)	3 (5.5%)	0
Pathologist E	8	5 (62.5%)	2 (25%)	1 (12.5%)	0

Kappa Analysis		Kappa
Original Diagnosis vs Pathologists A-E (Mean)		0.497
Inter-pathologist agreement		0.669

Kappa by Size	Kappa (less than 1 cm)	Kappa (greater than 1 cm)	P-value
Original Diagnosis vs Pathologists A-E	0.313	0.682	0.006
Inter-pathologist agreement	0.606	0.697	0.148

Kappa by Location	Kappa (Proximal colon)	Kappa (Distal colon)	P-value
Original Diagnosis vs Pathologists A-E	0.579	0.520	0.530
Inter-pathologist agreement	0.700	0.676	0.704

Results

- On average, the five GI pathologists matched the previous diagnosis on 74.1% of 163 SPs.
- The mean kappa value for variability in SP diagnoses between original diagnosis and each GI pathologist was 0.497.
- Kappa value for polyps less than 1 cm was 0.313 versus 0.682 for polyps greater than 1 cm (p=0.006).
- The mean kappa value between all pathologists in their re-diagnosis was 0.669.
- There was no significant difference in kappa when stratified by proximal versus distal colon.

Discussion

- Re-diagnosis of SPs resulted in only moderate level agreement between GI pathologists and the previous diagnosis.
- Interestingly, inter-observer agreement among pathologists was at a good level.
- There was increased agreement for larger polyps, but not for location.