

Sessile serrated adenomas detection rate among the surgeons and the gastroenterologists: A retrospective analysis

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ABSTRACT

Background: Sessile serrated adenomas (SSAs) are flat or sessile benign lesions occasionally covered by a mucous cap and invariably lead to colorectal cancer. The adenoma detection rate (ADR) is recognized as an important quality measure for colonoscopy. **Objective:** The objective of the study was to evaluate and compare the ADR during colonoscopy among surgeons and gastroenterologists. **Materials and Methods:** In this retrospective analysis, all colonoscopies performed during July 2018–July 2019 at Caboolture Hospital, Queensland, Australia were included in the study. After considering the inclusion and exclusion criteria, the rate of sessile polyp detection among the gastroenterologist versus surgeons was investigated by calculating a correlation coefficient weighted by factors such as experience, colonoscopy intubation time, and removal of scopes. **Results:** A total of 3425 colonoscopies performed by 7 surgeons and 4 gastroenterologists were assessed. Among them, 58.7% colonoscopies were performed by the surgeons, while gastroenterologists performed 41.3% colonoscopies. The median age of patients was 56.5 years (25–88 years), more common in male than female (58.9% and 41.1%, respectively, $p < 0.0001$). The average withdrawal time among the surgeons and gastroenterologist was 8.05 and 8.54 min, respectively ($p = 0.02$). Mean cecal intubation rate among the surgeons and gastroenterologist was 94.7% and 97.4%, respectively. Most patients had adequate bowel preparations; however, poor bowel preparation was observed among 6.15% gastroenterology patients and 5.6% in surgical patients. **Conclusion:** Based on the longer withdrawal time and improved skillset, sessile serrated polyp detection rate during colonoscopy was higher among the gastroenterologist as compared to the surgeons.

Key words: Colonoscopy, Detection rate, Gastroenterologist, Interval colorectal cancer, Sessile serrated adenoma, Surgeons

Colorectal cancer (CRC) is a major cause of cancer mortality in the world. Serrated polyps (SPs) have been recognized as an important premalignant lesions accounting for 15–30% of CRCs [1]. Sessile serrated adenomas (SSAs) are usually flat or sessile lesions occasionally covered by a mucous cap. Due to the subtle morphology, they are difficult to detect. However, when detected they are often incompletely resected [2,3]. They are believed to undergo malignant transformation in a short period of time. However, the rapidity of malignant transformation between SPs and conventional adenomas is debatable. It is known that the hMLH1 DNA mismatch repair gene is epigenetically silenced in sporadic microsatellite instability cancers and appears to be a late event. With the silencing of genes, these tumors are prone to develop additional mutations at a rapid rate, similar to what happens in patients with Lynch syndrome [4]. The ability to detect SPs by fecal blood testing, computed tomographic colonography is very limited. SPs are less likely than adenomas to bleed, so fecal occult blood testing is unlikely to detect these lesions. Colonoscopy plays an important role in detection of precancerous adenomas. Therefore, adenoma detection rate (ADR) is an excellent indicator of colonoscopy quality [5].

Predominantly located in the proximal colon, subtle, sessile nature of the lesions, often make it difficult to define the edges of the lesion to ensure complete resection. Increased familiarity with the endoscopic appearance of these subtle lesions may improve detection and increase the level of protection provided by colonoscopy from colon cancer [6]. Since data on the natural history and rate of progression of SPs to malignancy are limited, recommendations regarding surveillance of serrated lesions depend on the expert opinion from the experienced endoscopist. Like conventional adenomas, the risk for CRC among patients with SPs depends on the size, number, and the presence of dysplasia. Literature suggests that proximal SPs with larger size have an increased risk of malignant transformation [7]. A similar study pertaining to Adenomas in 2012 showed detection of adenomas among endoscopists who had longer mean times for withdrawal of the colonoscope [8].

Colonoscopic surveillance must be performed keeping in mind the perceived risk of malignancy. To optimize colonoscopic detection of sessile SPs the following points must be noted: A high-quality bowel preparation, adequate luminal distention with careful mucosal inspection and diligent washing of debris, and a slow colonoscopic withdrawal [9]. In addition, it is advisable to stratify

SPs by size, number, and the presence of dysplasia. A growing body of evidence is emerging linking SSA/polyps and the development of bowel cancer. Increasingly detection of these lesions is seen as a crucial key performance indicator of quality colonoscopy and therefore should be given priority in the everyday practice of those who provide a colonoscopy service [10]. Significant variation in the detection rates by endoscopists have been reported in literature. However, data on studies conducted in a smaller more regional center are limited. Hence, the present study was planned to evaluate the SSA detection rate (SSADR) among the surgeons and the gastroenterologist in a public teaching hospital in Queensland, Australia by retrospectively analyze the factors effecting the rate of SSA polyp detection using available resources.

MATERIALS AND METHODS

A retrospective cohort study was carried out at Caboolture Hospital in Queensland, Australia, on adults who underwent colonoscopies within the period of 13 months from July 2018 to July 2019. The study was approved by the institution ethics committee. Data were collected from Operating Room Management Information (ORMIS) ORMIS, AUSLAB/AUSCARE databases. The colonoscopy reports were correlated with the histopathological diagnosis of sessile SPs (SSA), with or without cytological dysplasia. Records of patients who underwent colonoscopy with good bowel preparation for indications such as bone cancer surveillance, positive fecal occult blood test, and having symptoms such as abdominal pain, anemia, chronic diarrhea from surgeons, and gastroenterologist with ≥5 years of experience in performing colonoscopy were included in the study. Colonoscopies performed after poor bowel preparation, those performed by registrars, procedures aborted due to difficult anatomy, and those performed with flexible sigmoidoscopy were excluded from the study.

Parameters such as age, sex, indications for colonoscopy withdrawal time, cecal incubation rate, and bowel cleansing time were recorded. We used Endoscopists experience and their average withdrawal time was calculated and compared to that of surgeons. Predictors of ADR were similarly examined, but adenoma detection of corresponding total colonoscopy was added as a predictor. According to Gastroenterological Society of Australia, an initial SSA/P detection rate criterion of 4% was considered as benchmark value. The collected data were analyzed using SPSS system 26, Chi-squared test was used for categorical variables and a p<0.05 was considered statistically significant. The bivariate association of sessile detection rate using inclusion and exclusion of each gastroenterologist and surgeon was illustrated by a bar diagram and correlation coefficient that were weighted by the number of performed total colonoscopies.

RESULTS

Data collected from a total of 3425 colonoscopies performed by 7 surgeons and 4 gastroenterologists were assessed. Surgeons

performed 2012 (58.7%) and gastroenterologists performed 1413 (41.3%) colonoscopies. The percentage of detection of SSA is described in Fig. 1. The median age of patients was 56.5 years (25–88 years), study cohort consisted predominantly males as compared to females (58.9% vs. 41.1%; p<0.0001). The average withdrawal time among the surgeons was 8.05 min and gastroenterologist was 8.54 min (p=0.02). Mean cecal intubation rate among the gastroenterologists and surgeons was 97.4% and 94.7%, respectively. Most patients had adequate bowel preparations; however, poor bowel preparation was averaged 6.15 gastroenterology patients and 5.6 in surgical patients (Table 1). Some procedures were aborted due to difficult anatomy/severe diverticular disease or inadequate bowel preparations. SSADR was high among patients with previous history of colonic polyps/SSAs 34.9% FOBTs 30.1% and 25% among other indications for colonoscopies.

DISCUSSION

SPs are premalignant lesions which include SSAs, traditional serrated adenomas, and the usually benign hyperplastic polyps (≥10 mm). SSAs are difficult to detect and are associated with interval CRC. Evaluation of the SSADRs is crucial. SSAs are endoscopically characterized by a flat shape, an indiscrete edge, and color similar to the surrounding mucosa and are often covered with mucus. Traditionally linked only to the adenoma-carcinoma sequence, it is now well known that CRC can also arise from an “alternate,” serrated neoplasia pathway, SSA being the chief precursor lesion [6]. The natural history of SSAs is still unclear but recent evidence suggests SSAs without dysplasia are indolent

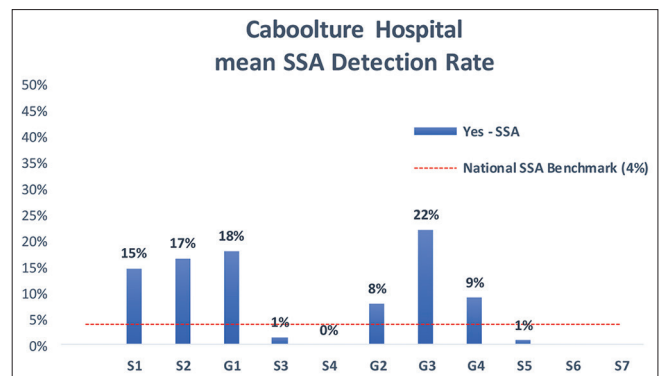


Figure 1: Frequency distribution of sessile serrated adenomas detection rate among surgeons (S) and gastroenterologist (G), red dotted line represents the bench mark ADR of 4% followed in Aus-tralia

Table 1: Factors affecting the sessile serrated adenomas detection rate among surgeons and gastroenterologists

Endoscopic parameter	Surgeons	Gastroenterologists
Cecal intubation rate	94.7%	97.4%
Withdrawal time	8.05 min	8.54 min
Poor bowel preparation	5.6%	6.15%
Average sessile serrated adenomas detection rate	14.75%	9.71%

lesions with a mean dwell time of over 15 years. If cytological dysplasia does develop, the dwell time is thought to be short and carcinoma may develop in <1 year. There is evidence that SPs ≥ 10 mm are more frequently associated with synchronous advanced neoplasia [11]. Protection from CRC is derived from the detection and removal of potentially precancerous polyps, including adenomas and a subset of SPs. Setting appropriate benchmarks for SDRs can guide endoscopists toward high-quality appropriate practice.

Payne *et al* reported that the prevalence of SSAs varied among endoscopy centers [12]. In addition, Abdeljawad *et al.* reported that a review of pathology slides by an experienced gastrointestinal pathologist increased the prevalence of SSAs, and the prevalence of SSAs increased over the study period, suggesting that each endoscopist improved his detection skills over time [13]. The quality of the pathological evaluation was also high, because the experienced gastrointestinal pathologist (U.T.), who was acquainted with the definition of the Japanese Society for Cancer of the Colon and Rectum, reassessed the pathology slides. The factors associated with SSA detection were investigated, and our study demonstrated that adenoma detection at the patient level was the only independent significant factor associated with SSA detection.

Previous reports have shown that when a patient presented with serrated lesions, especially SSAs, he/she was also more likely to have advanced neoplasia. Greenspan *et al.* observed that some endoscopists who had average or higher than average ADRs had low rates for advanced adenoma detection [14]. A withdrawal time of ≥ 8 min was not a statistically significant factor for SSA detection, although it was significantly related to adenoma detection. However, considering that ADR and SSADR are correlated, a longer duration of inspection seems to improve ADR and SSADR. Rex *et al.* [15] have also recently reported that using overall ADR to calculate ADR from screening, surveillance, and diagnostic colonoscopies would be just as effective as a screening-only. Finally, the ratio of adequate bowel cleansing in this study was much higher than in previous studies. The ASGE guidelines recommend that the quality of bowel cleansing should be evaluated after retained fluid or stool has been suctioned [16]. In our institution, if fluid and stool were retained, gastroenterologists suctioned as much as possible to identify polyps ≥ 5 mm in size. In the current analysis, we observed that longer withdrawal times were associated with higher ADRs. We have demonstrated previously that longer withdrawal times are associated with higher rates of SP detection [17].

Although SSAs are difficult to detect, its detection is crucial as they are associated with interval CRC. Our study demonstrated that the SSA detection was higher in male patients than in female patients for average-risk screening. A high ADR may not always correlate with high SSADR, and therefore detection of SSA may be an independent skill. A potentially longer withdrawal time could have the increased detection rates observed, some authors have reported longer withdrawal times associated with increased SSA detection [8,18]. Most endoscopists achieved the

benchmark as per the Australian guidelines recommendation. Higher SSADRs was observed among the gastroenterologists as compared to the surgeons. This was likely due to their higher withdrawal time and better skill sets compared to surgeons. The sessile ADR of <4% observed among some surgeons was likely due the withdrawal time of 6 min or less. Furthermore, most gastroenterologist took a longer withdrawal time hence higher detection of SSAs even though the average difference was only 49 s. It could be therefore demonstrated, a withdrawal time > 8 min seems to improve SSADR.

CONCLUSION

SSADR was higher in gastroenterologists as compared to the surgeons. Higher experience, longer withdrawal time, and cecal incubation time are associated with SSADRs. In addition, subsequent investigations are needed to validate whether achieving these SDR benchmarks will offer protection from cancers that arise from the serrated pathway, and more studies are needed to determine optimal detection rates associated with the lowest risk from serrated cancers.

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