Sessile serrated lesion (SSL) is the current World Health Organization (WHO)–recommended terminology1 for a type of serrated colorectal polyp characterized by disordered maturation, abnormal basal crypt growth, and propensity for developing cytologic dysplasia and ultimately carcinoma. The WHO diagnostic criteria indicate that a polyp with at least one unequivocal architecturally distorted serrated crypt “defined as horizontal growth above the muscularis mucosae, dilation of the crypt base, serrations extending into the crypt base, and asymmetrical proliferation” be interpreted as an SSL. They note that these lesions often are proximally located, but that location and size should be considered only when orientation or ambiguity complicates the diagnosis.3 Both the nomenclature and the diagnostic criteria for SSL have changed multiple times since the entity’s early description to our current understanding.1–3 As published literature grew, so did detection by endoscopists and diagnosis by pathologists.12–16

Conclusions.—The current World Health Organization criteria are a distillation of this scientific process, but terminology is still a point of contention worldwide. (Arch Pathol Lab Med. 2021;145:1289–1296; doi: 10.5858/arpa.2020-0591-RA)

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From Mixed Hyperplastic/Adenomatous Polyp to Sessile Serrated Lesion

A Long and Winding Road for Long and Winding Crypts

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• Context.—During the past 3 decades, numerous articles in the literature have offered terminology, diagnostic criteria, and consensus recommendations regarding the entity currently referred to by the World Health Organization as sessile serrated lesion. Given the many names and various, variably reproducible diagnostic criteria ascribed to sessile serrated lesion, confusion persists for many pathologists and gastroenterologists regarding the diagnosis. This distinction is important, as sessile serrated lesion can progress to malignancy, unlike its main differential diagnosis, hyperplastic polyp. Research studies have shed light on the characteristic architecture and morphology, immunohistochemical patterns, and molecular alterations of sessile serrated lesion, and multiple consensus meetings around the globe have developed their criteria and nomenclature, often clashing or mixing terms.

Objective.—To provide a narrative review from the entity’s early description to our current understanding.

Data Sources.—The existing scientific and clinical literature, published texts, medical society recommendations, and specialty consensus guidelines.

Conclusions.—The nomenclature timeline for sessile serrated lesion (SSL) is the current World Health Organization (WHO)–recommended terminology1 for a type of serrated colorectal polyp characterized by disordered maturation, abnormal basal crypt growth, and propensity for developing cytologic dysplasia and ultimately carcinoma. The WHO diagnostic criteria indicate that a polyp with at least one unequivocal architecturally distorted serrated crypt “defined as horizontal growth above the muscularis mucosae, dilation of the crypt base, serrations extending into the crypt base, and asymmetrical proliferation” be interpreted as an SSL. They note that these lesions often are proximally located, but that location and size should be considered only when orientation or ambiguity complicates the diagnosis.3 Both the nomenclature and the diagnostic criteria for SSL have changed multiple times since the entity’s first description, often leading to confusion and consternation on the part of pathologists and gastroenterologists. This nomenclatural vacillation is illustrated in Figure 1, which plots the use of the most common terms in the literature over time and may serve as a guide for the reader.2

Before the 1980s, 2 types of colon polyps were recognized: the hyperplastic polyp (HP; Figure 2, A) and the traditional or conventional adenoma (TA).3 Hyperplastic polyps were frequently small (<0.5 cm) and sessile, with serrated architecture and mature goblet cells lacking dysplasia.4 Traditional adenomas varied from tubular to villous in architecture, with crowded glands composed of pseudostratified dysplastic columnar cells and immature goblet cells. Most importantly, HPs were uniformly considered benign, whereas TAs were recognized as preneoplastic lesions in the adenoma-carcinoma sequence, which itself was hotly debated until at least the mid-1970s.5–11

With considerable advances in subsequent decades, a broad array of preneoplastic polyps has been recognized. This includes SSLs (Figure 2, B), which were undoubtedly misinterpreted as HPs by pathologists for decades. Similarly, sessile lesions were often missed by endoscopists because of their subtle, flat gross appearance or not biopsied because endoscopic features can overlap with those of benign HPs.12 As published literature grew, so did detection by endoscopists and diagnosis by pathologists.12–16

Although TAs can progress to colorectal carcinoma (CRC) via the chromosomal instability pathway, SSLs serve as precursor lesions for most of the approximately 30% of CRC that arises through the serrated neoplasia pathway.17,18 That pathway is thought to begin with activating mutations in...
BRAF present in almost all SSLs or KRAS in the majority of traditional serrated adenomas (TSAs), a distinct serrated polyp with some morphologic overlap with SSL (Figure 2). BRAF mutations are followed by hypermethylation of CpG islands (so-called CpG island methylator phenotype [CIMP]), resulting in silencing of tumor suppressor expression (eg, MLHI) and ultimately giving rise to CRC.17 A minority of SSLs proceed through the WNT activation pathway with TP53 mutations, leading to microsatellite-stable CRC.19–21

It has been shown that patients with an SSL are at an equivalent or greater risk for CRC development as those with a conventional adenoma.22 Additionally, studies have demonstrated higher rates of interval CRC arising from the serrated pathway.23–25 These findings highlight the importance of distinguishing SSL from HP, as accurate diagnosis ensures that patients can be appropriately screened per the 2020 US Multi-Society Task Force on Colorectal Cancer recommendations.26 Unfortunately, this distinction is not always straightforward, nor is the complex history regarding nomenclature and diagnostic criteria for SSL. This history is tabulated in the Supplemental Table (see supplemental digital content at https://meridian.allenpress.com/aplm in the October 2021 table of contents) and elaborated upon further below. (Note: The term SSL will be used throughout the review for consistency and clarity, despite the term’s postdating much of the discussed literature.)

**EARLY DAYS**

Early reports in the late 1970s and early 1980s recognized large, sessile serrated hyperplastic lesions with adenomatous changes that more often occurred in the ascending colon.27 These were aptly named mixed hyperplastic/adenomatous polyps by Urbanski et al.28 In 1990, a prescient publication by Longacre and Fenoglio-Preiser29 introduced the term serrated adenomas to describe the previously named mixed hyperplastic/adenomatous polyps in order to differentiate these neoplastic lesions from benign HPs. The authors also suggested that serrated adenomas followed an analogous pathway to that of the adenoma-carcinoma sequence. Morphologically, serrated adenomas were described at low power as having prominent glandular serration with irregular glandular budding, minimal to marked nuclear pseudostratification with intermediate nuclear to cytoplasmic ratios, upper-zone mitoses, and variably immature to hypermature goblet cells, which may be dystrophic. Dysplasia was recognized on the basis of cytologic features, including incomplete mucinous differentiation, irregular or enlarged nuclei, and prominent nucleoli.29

The early criteria set forth by Longacre and Fenoglio-Preiser29 led to 2 important studies by Torlakovic and Snover30 and Torlakovic et al,31 published in 1996 and 2003, respectively. The first30 evaluated a cohort of 6 study patients previously diagnosed with hyperplastic polyposis syndrome, 4 of whom had developed associated adenocarcinoma. Polyps from the study cohort were compared with isolated control HPs, tubular adenomas, and serrated adenomas as described by Longacre and Fenoglio-Preiser.29 The authors concluded that polyps from study patients, although resembling HPs, were more accurately interpreted as serrated adenomas. Torlakovic and Snover30 stated the most helpful discriminating features were prominent dilation of the crypt base, presence of horizontally oriented crypts, large areas without endocrine cells, nuclear atypia (basally located round or ovoid enlarged, hyperchromatic nuclei with prominent nucleoli), focal mucus production, a proliferative zone in the middle to upper portion of the crypt with basal goblet cells, and frequent eosinophilic cyttoplasm. The now-characteristic SSL morphology of dilated crypt bases or horizontally oriented crypts was coined,30 which expanded on the prominent serration with irregular branching described by Longacre and Fenoglio-Preiser.29 Additionally, the presence of a proliferation zone shifted to the middle and upper portion of the crypt, with basally located goblet cells, was included.

Also in 1996, 2 publications by Rubio and Jaramillo32 and Rubio et al33 introduced the term flat serrated adenoma for lesions characterized by dysplastic nuclei, a lack of exophytic polyoid growth, and serrations along the sides of the crypts. Given the available photographs and descriptions of these lesions, it is unclear how many of these represented SSL with extensive cytologic dysplasia, versus TAs with unusual serrated architectural features. This particular term has not persisted in the literature.

In a 2003 follow-up study, Torlakovic et al33 retrospectively used 24 morphologic variables to review 289 previously diagnosed serrated polyps that classically were categorized as HPs. The study reinforced earlier criteria, including prominent dilation of the crypt base and abnormal proliferation zones. The authors suggested it was those serrated polyps with abnormal proliferation zones that were historically considered HPs. They further added to their major features the presence of abundant luminal and surface mucin. Lastly, it was commented that these polyps were more frequently found in the right colon and were larger than HPs. A major nomenclature takeaway from the 2003 study was a recommendation to use the term sessile serrated adenoma.31 These early studies recognized the characteristic
low-power serrated glandular architecture with irregular budding and dependency on cytology for diagnosing evident cytologic dysplasia (Figure 2, D) by Longacre and Fenoglio-Preiser.29 The establishment of terms now used to describe SSL-like crypts by Torlakovic et al31 (eg, broadly dilated base, horizontally oriented crypts) and the clarification of abnormal proliferative zones7,21 provided the foundation for how to diagnose SSLs and how pathologists would refer to the entity clinically. Also noteworthy is the characterization of the TSA by Torlakovic et al31 in the same 2003 study. Traditional serrated adenomas were described as pedunculated lesions with serrated architecture, focal nuclear atypia with frequent pseudostratification, and surface epithelium with micropapillations and eosinophilic cytoplasm.31 It has been argued that the initial description of serrated adenoma by Longacre and Fenoglio-Preiser29 represents what we now call a TSA,20 making it perhaps slightly unclear exactly when this entity was first described.

In 2003, Goldstein et al34 performed a retrospective review of 106 mostly right-sided hyperplastic-like polyps from patients who later developed same-site microsatellite-unstable adenocarcinomas. The right-sided study polyps were compared with a control group of left-sided HPs, with 18 features evaluated.34 Their findings supported those of previous studies, namely that 2 types of hyperplastic-like polyps existed.35–40 One type was more often found in the rectum, sigmoid, and descending colon; it was small, with nondilated serrated crypts and little to no dysmaturation. Conversely, the second type had serrated architecture with basally dilated crypts and expanded proliferation zones, tended to be large, and was found in the cecum and ascending colon. The former appeared to have no risk of progression to adenocarcinoma, in contrast to the latter. The authors41 were careful to add that size and location should not be grounds for absolute categorization, as small serrated polyps were known to harbor risk of progression. From

Figure 2. There are a handful of serrated and/or dysplastic polyps of the colon encountered by pathologists. A, Although hyperplastic polyps are also serrated and sometimes sessile, they show less glandular crowding, and the serrated changes only affect the upper aspect of the involved crypts. B, Sessile serrated lesion is characterized by dilated crypts with serrated epithelium extending all the way to the crypt bases, which are distorted and may branch sideways. C, Traditional serrated adenomas show slitlike serrations, ectopic crypt foci, abundant eosinophilic cytoplasm, and mildly dysplastic nuclei. D, Sessile serrated lesion with cytologic dysplasia, as shown here, demonstrates a conventional adenomatous pattern with enlarged, hyperchromatic nuclei and upper crypt mitoses (inset). Note the sharp demarcation from nondysplastic to dysplastic epithelium (hematoxylin-eosin, original magnifications ×40 [A, B, and D], ×100 [C], and ×200 [inset D]).
these results, Goldstein et al\textsuperscript{34} supported the recommendation of Torlakovic et al\textsuperscript{31} endorsing the term sessile serrated adenoma.

However, shortly following Goldstein et al\textsuperscript{34}, an editorial by Jass\textsuperscript{42} argued against using sessile serrated adenoma, noting that morphologically the entity more closely resembled an HP than a TA, that HPs carry genetic mutations, and that by experience a sessile serrated adenoma necessitated an intermediate step prior to becoming definitely dysplastic or adenomatous. Thus, Jass\textsuperscript{42} established and preferred the term sessile serrated polyp. In 2004, O’Brien et al\textsuperscript{43} used the term serrated polyp with abnormal proliferation, a phrase once used in a figure caption in the 2003 Torlakovic et al\textsuperscript{31} study. O’Brien et al\textsuperscript{45} described it as synonymous to sessile serrated adenoma and diagnostically followed the same criteria\textsuperscript{46}; the rationale for the proposed name change is unclear. Snover et al\textsuperscript{14} discussed both these proposed terms in a subsequent morphologic review in which they suggested the term sessile serrated polyp could be confusing as a descriptor, as it would apply to both HPs and SSLs. They\textsuperscript{14} continued by stating the term serrated polyp with abnormal proliferation failed to convey the recognized preneoplastic nature of SSLs. So, while the major diagnostic features of SSLs became clearer, the nomenclature grew murkier.

**INTER OBSERVER VARIABILITY AND REFINEMENT OF DIAGNOSTIC CRITERIA**

Despite initial advances in diagnostic criteria, it was recognized that diagnostic discordance existed among pathologists with regard to distinguishing SSLs and HPs.\textsuperscript{44–47} This differed from studies comparing purely hyperplastic and adenomatous polyps, in which pathologists showed high levels of agreement.\textsuperscript{48} In 2007, Glatz et al\textsuperscript{49} performed an Internet-based quiz on 20 colorectal polyps, reporting that interobserver variability was significant for SSLs and that consistent use of nomenclature still plagued the group of 168 respondents. Farris et al\textsuperscript{50} further evaluated pathologists’ criteria and diagnostic concordance of SSLs in a study wherein 5 expert gastrointestinal pathologists were tasked to discriminate among HP, SSL, and TSA, while stating the histologic features they considered important. The resulting \( \kappa \) value (0.58) was only moderate for distinguishing HP and SSL. It was found that polyps said to have intermediate features (dilation of crypt bases, abundant luminal mucin, crypt bases without serration, or other characteristic features of SSL) were most challenging, and authors determined those polyps should be classified as HP. Participants were supplied a list of 9 features important for the diagnosis of polyps and instructed to select the 3 most important. Results indicated serrated architecture starting in the crypt base, dilation of 10% or more of crypt bases, and other architectural features (eg, horizontal crypts, branched crypts, inverted crypts subjacent to the muscularis mucosae) were the top 3, with features of abnormal maturation coming in a close fourth. Thus, like the authors of earlier studies, the participants agreed the diagnosis of SSL was largely based on architectural findings rather than cytologic changes.\textsuperscript{14,50}

Pai et al\textsuperscript{31} demonstrated good interobserver agreement (\( \kappa = 0.66 \)) among 2 expert gastrointestinal pathologists using the following criteria for SSL: serrations at the crypt base, basal crypt dilation, horizontal crypts, absence of thickened subepithelial collagen layer, and mild cytologic atypia in the superficial crypts. The thickness of subepithelial collagen had been previously described by Torlakovic et al\textsuperscript{31} in 2003 but not expressly used as a criterion until now. The authors\textsuperscript{31} added to the SSL story by determining patients with one SSL were more likely to have additional serrated polyps. This was enhanced by Schreiner et al\textsuperscript{52} who found an associated increased risk for synchronous advanced neoplasia when large, proximal nondysplastic serrated polyps were identified on screening colonoscopy.

Higuchi et al\textsuperscript{52} sought to determine the frequency of various types of colorectal polyps and evaluate the clinicopathologic and immunohistochemical traits of serrated polyps compared with TAs. An SSL was considered to show exaggerated basal serration in the crypt with increased surface villosity or papillarity, crypt dilation, increased branching or horizontal/laterally branching crypts, increased cytoplasmic mucin in epithelial cells, superficial cytologic atypia with enlarged vesicular nuclei and prominent nucleoli, superficial mitoses, increased mucin (intracellular and/or luminal), and epithelial to stromal ratio greater than 50%. Results indicated SSL was more often proximal, had a higher proliferation rate in the middle third of the crypt, and showed increased MUC5AC expression compared with HP.\textsuperscript{52}

Chung et al\textsuperscript{53} sought to clarify the delineation of intermediate features between SSL and microvesicular HP (MVHP) by evaluation of small nondysplastic serrated polyps. The authors\textsuperscript{53} combined criteria described by Higuchi et al\textsuperscript{52} and by Torlakovic et al\textsuperscript{31} to develop a list of 7 SSL-like morphologic features, of which 4 must be present: exaggerated luminal serration, crypt dilation, horizontal or laterally branching crypts, increased cytoplasmic mucin in epithelial cells, patchy cytologic atypia, superficial mitoses, and increased epithelial-stromal ratio.\textsuperscript{31,52} Using these criteria, authors evaluated 50 nondysplastic serrated polyps, ultimately diagnosing 6 SSLs (\( \geq 4 \) features), 31 intermediate polyps, and 13 MVHPs (\( \leq 3 \) features). Intermediate polyps showed features between MVHP and SSL; all 31 were less than 1 cm, were found throughout the colorectum, and demonstrated 4 SSL-like features. They then used immunohistochemistry to evaluate expression patterns of MUC5AC, MUC2, MGMT, and Ki67 and molecular methods for BRAF and KRAS mutation analysis. The indeterminate polyps were found to be indistinct from larger, proximal SSLs on this ancillary testing. Compared with MVHP, there was increased expression of MUC5AC, MUC2, and Ki67 identified in SSL. This was in keeping with similar immunohistochemical results previously reported by Higuchi et al.\textsuperscript{52} However, Chung et al\textsuperscript{53} also identified these patterns in diminutive, distal SSL-like lesions. Additionally, BRAF mutations were commonly found in both SSLs and MVHPs, whereas KRAS mutations were relatively rare. These findings agreed with studies by O’Brien et al\textsuperscript{47} and Yang et al.\textsuperscript{53} and the rarity of KRAS mutations agreed with the early study by Ajioka et al.\textsuperscript{58} Therefore, Chung et al\textsuperscript{53} suggested the term sessile serrated polyp be restricted to large (\( \geq 1 \) cm), proximal polyps satisfying morphologic criteria until more was known about the natural history of small/diminutive SSL-like lesions.

Mohammadi et al,\textsuperscript{59,60} who recommended use of the term sessile serrated lesion (introduced by pathologists in Kyoto in 2008; see below) for the commonly cited reasons that they were neither adenomatous nor uniformly polyoid, advocated a simplified criterion for the diagnosis by requiring 2 of 4 structural features: dilation of the base, serration of the base, branching crypts, and/or horizontal

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**Nomenclature Timeline for Sessile Serrated Lesion—Booth et al**
orientation of crypts. Furthermore, they said an SSL with only 1 of the 4 was considered a borderline SSL, which they stated was best thought of as a serrated lesion that was ambiguous between HP and SSL. They suggested such borderline lesions preceded SSLs, with size being the most remarkable difference.\textsuperscript{57} In a follow-up study, the authors\textsuperscript{59} demonstrated that along with morphologic similarities, borderline lesions harbored \textit{BRAF} mutations at frequencies on par with clear-cut SSLs. This supported earlier studies\textsuperscript{53–55} of “indeterminate” lesions having similar immunohistochemical and molecular properties to those of obvious SSLs.

Additional attempts to ease diagnostic confusion in serrated polyps using immunohistochemistry (eg, MUC5AC, MUC2, MGMT, MLH1, Ki67, CK20) have also been published.\textsuperscript{52–55,60} Notably, Torlakovic et al\textsuperscript{60} demonstrated an irregular distribution of Ki67 and CK20 expression throughout the crypt, as described early on by Ban.\textsuperscript{61} Hernandez Gonzalo et al\textsuperscript{62} demonstrated that annexin A10 (ANXA10) expression by immunohistochemistry was significantly greater in SSLs compared with MVHPs, resulting in a sensitivity of 73\% and specificity of 95\% when positive staining was present in greater than 50\% of serrated crypts. Cui et al\textsuperscript{63} evaluated Hes1 immunohistochemistry in SSL versus HP, finding that Hes1 expression is completely lost or only weakly expressed in SSLs; they also observed cytoplasmic Hes1 staining in foci of dysplasia. Nourbakhsh and Minoo\textsuperscript{64} published similar results, evaluating ANXA10 and Hes1 expression patterns in SSLs. Most recently, expression of the extracellular matrix proteoglycan agrin was demonstrated to be localized in the muscularis mucosae of SSLs with a specificity of 97.1\% and sensitivity of 98.8\% for differentiating SSLs from TAs, HPs, and TSAs.\textsuperscript{65} Despite seemingly promising findings, these immunohistochemical stains are available in relatively few laboratories and have not been robustly tested in daily sign-out settings.

These studies laid the groundwork for the morphologic characteristics of SSL, including the most reliable features for distinguishing them from HPs. Although some diagnostic variability remained, the larger problem was the abundance of names used to describe the entity.

**MEETINGS OF THE MINDS**

In early 2008, a large multidisciplinary working group met in Kyoto, Japan, seeking to find consensus on nonpolypoid neoplastic lesions of the colorectal mucosa. It was here that authors first stated that because of the lack of adenomatous change and frequent nonpolypoid or slightly elevated morphology, the term SSL should be adopted. Their diagnostic criteria included 5 architectural features: (1) increased serration in the basal crypts, which are dilated, branching with horizontal growth, forming inverted T-shaped or L-shaped glands just above the muscularis mucosae (Figure 3, A and B); (2) expansion of the proliferation zone asymmetrically to the middle of crypts; (3) epithelium to stroma ratio above 50\% (Figure 3, C); (4) abundant mucin with pools in the crypt lumen and the surface mucosa; and (5) only slightly enlarged vesicular nuclei with nucleoli.\textsuperscript{58}

In 2010, the Working Group of Gastroenterological Pathology of the German Society of Pathology\textsuperscript{66} tried to standardize nomenclature and diagnostic criteria for serrated polyps. Following consensus, the group identified their 4 preferred diagnostic features: (1) hyperserration/serration in...
the lower third, (2) L- or T-shaped crypts above the muscularis mucosae, (3) inverted crypts above the muscularis mucosae, and (4) columnar dilation in the lower third of crypts. To simplify the diagnosis, they further stated that only 2 of 4 features needed be present in 2 noncontiguous crypts. With regard to nomenclature, the group recommended use of the term sessile serrated adenoma, arguing that lesion was broadly open to interpretation. For suspected SSLs in which the basal aspects could not be evaluated, the term sessile serrated polyp was recommended.46

The 2010 WHO Classification of Tumours of the Digestive System67 attempted a simple compromise in nomenclature by stating both sessile serrated adenoma and sessile serrated polyp were acceptable and synonymous; accordingly, they introduced the combined term sessile serrated adenoma/polyp (SSA/P). Characteristic morphologic features for diagnosis followed previous lines of thought, with the addition of stating 2 or 3 contiguous crypts exhibiting SSL features were enough for classification.67-69 Similar to SSA/P, the term sessile serrated polyp/adenoma has been used by a few authors.70-72 A study evaluating cyclooxygenase-2 expression in SSLs73 used sessile serrated polyp/adenoma to reconcile sessile serrated adenoma as initially coined by Torlakovic et al71 with Jass'42 preferred term sessile serrated polyp. In their editorial discussing the consequences of SSL diagnosis for pathologists and gastroenterologists, Leedham et al72 appreciated the use of polyp in the absence of adenomatous change but also the common usage of adenoma by many, stating that they appeared to be used synonymously. Thus, they decided on sessile serrated polyp/adenoma until an agreement on terminology was reached.72

In 2010, a pan-European project73 brought together experts from across the European Union to develop standards and guidelines for screening and diagnosis in colorectal cancer. This group also recommended that the term SSL replace sessile serrated adenoma and sessile serrated polyp. They stated that use of the latter terms may confuse practitioners in screening programs.73 Vieth et al75 concurred with the European Union guidelines, stating the lack of adenomatous change disqualified use of the word adenoma. The authors described SSLs as larger lesions with architectural distortion, significantly dilated crypts, abundant mucin, and abnormal proliferation centers.

Similar to Japan and the European Union, an expert panel77 met in Cleveland, Ohio, and published recommendations for serrated lesions of the colon in 2012. Most importantly, the authors77 proposed that the presence of “a single unequivocal architecturally distorted, dilated, and/or horizontally branched crypt, particularly if it is associated with inverted maturation, is sufficient for a diagnosis of SSA/P.” This panel did not specify location or size with regard to diagnosis, only stating that most large right-sided serrated polyps were SSLs. The Cleveland panel reiterated the synonymous and equal acceptability of sessile serrated adenoma and sessile serrated polyp, citing earlier work by Torlakovic et al.35,65 In their critical appraisal, Bettington et al78 demonstrated greater diagnostic concordance among pathologists using the Cleveland group’s one SSL-like crypt criterion compared with the 2010 WHO’s required 2 or 3 contiguous crypts exhibiting SSL features. This recognition and emphasis on only one SSL-like crypt functioned as a distillation of criteria from all previous studies.

Alternatively, guidance from the United Kingdom77 in 2015 recommended following the 2010 WHO diagnostic criteria for SSL, more specifically 2 or more characteristic crypts. The authors77 also recommended standard usage of the term SSL, citing the lack of adenomatous morphology. Challenges to diagnosis were also plagued by tangential cutting and specimen orientation, which may preclude appraisal of the most basal aspects of a crypt. Kolb et al78 evaluated both specimen orientation and compared interobserver agreement using the 2010 WHO77 and Cleveland consensus panel73 criteria. The authors found significantly higher agreement using the Cleveland criteria and significantly fewer indeterminate diagnoses. Moreover, they found that use of a modified protocol whereby the endoscopy technician places the specimen in an envelope, gently flattens it, and then places it in formalin significantly aided the diagnosis, recognizing the importance architecture plays in specimen review.79

In 2017, the British Society of Gastroenterology79 followed the recommendations of the 2015 UK group,77 opting to continue using the 2010 WHO criteria and the term SSL. During these apparent schisms, it was often noted that the use of various terms and different diagnostic criteria could contribute to the confusion surrounding SSL.76,77,80 Snover80 published a review in 2019 using the term SSA/P and stating, “As a rule, the presence of any truly distorted crypt should be considered enough to allow the diagnosis of SSA/P, as long as that crypt is not simply a dilated crypt.” He added that there are often adequate features to make the diagnosis without relying solely on a single crypt.80 The same year, Pai et al80 published an update with criteria following the single unequivocal SSL-like crypt previously described and using the term sessile serrated polyp. Regarding nomenclature, Pai et al80 suggested abandonment of the term sessile serrated adenoma and replacement with either sessile serrated polyp or SSL. Later that year, the WHO Classification of Tumours: Digestive System Tumours, 5th edition,1 was published, with criteria matching those of Pai et al 2019.50 However, in keeping with the UK guidance, the term SSL was adopted by the WHO.1,16

Despite the numerous bodies advocating for the term SSL, including the WHO, there remain holdouts to this change in terminology. This was exhibited by an online survey conducted by Ono et al81 in late 2019, which clearly demonstrated resistance among North American pathologists, with only 29% (79 of 274) planning to adopt the term compared with 78% (31 of 40) and 70% (21 of 30) of European and Asian pathologists, respectively. Furthermore, 85% (186 of 219) of respondents declining to use SSL selected the response that they did so because they felt it “might confuse/frustrate my gastroenterologist colleagues.”81 Indeed, at our own institution, we have discussed the new terminology but have opted to maintain the status quo in an effort to preserve collegial interdepartmental communication and, most importantly, prevent undesired confusion in patient care.

CONCLUSIONS

It appears that after more than 3 decades, the pathology community has come to more or less an agreement on the diagnostic criteria for SSL. Architectural features described as SSL-like and routinely defined as an asymmetric dilation, horizontal growth along muscularis mucosae, exaggerated serrations extending deep into crypt with basal dilation, and L- or inverted T-shaped crypts are the major contributing morphologic hooks on which pathologists may hang their proverbial hat. Location and size are helpful but not
diagnostic on their own. Cytologic features have a limited role, if any, in diagnosing SSL, though they of course differentiate SSL from SSL with cytologic dysplasia.

Although criteria for diagnosis appear fairly clear (in theory if not in practice), terminology remains polarizing. The term SSL seems potentially poised to become the ultimate winner, though adoption by the majority of pathologists may be slow and nonuniform. Until a unified term is widely adopted, pathologists should work with their local gastroenterologist colleagues to ensure that no confusion arises regarding the diagnosis and clinical implications of the lesions seen in their patient populations.

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