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ORIGINAL ARTICLE

# Is Taking Routine Biopsy from Incisura Angularis During Gastroscopy Necessary?

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## Abstract

**Introduction:** The updated Sydney system recommends sites and numbers of stomach biopsies (mapping) for evaluation of *Helicobacter pylorii* colonization, glandular atrophy, intestinal metaplasia (IM), gastrit ulcer, and cancer. The incisura angularis is considered to be a typical site for early detection of premalingnant lesions. Our study aimed to clarify whether it is necessary to take biopsy from the incisura angularis routinely during gastrocopy in addition to corpus and antrum biopsies.

**Methods:** Nine hundred ninety-eight patients, with a mean age±SD of 51.13±15.2 were enrolled. Two biopsies had been taken from antrum, two from corpus, and one from incisura angularis during routine gastroscopy. Biopsy samples were taken from the stomach mucosa with non-visible detectable lesions. Histologic specimens were graded using the updated Sdyney classification.

**Results:** H. Pylori was identified in 464 (46%) of the 998 patients. Two hundred and fifty-four (25%) patients of the 998 showed IM and 73 (7%) patients of the 998 showed atrophic gastritis. Of the 998 patients 15 (1.5%) showed *H. pylorii* positive in the angulus biopsy only. Similary, IM in 24 patients (2.4%) and atrophy in 15 patients (1.5%) were showed in the incisura angularis. Severe glandular atrophy score in the incisura was higher than the antrum and corpus.

**Discussion and Conclusion:** Based on our study, taking routine biopsies from incisura angularis provides little additional information; however, angulus biopsies are significant to detect severe premalignant lesion especially in high-risk patients.

**Keywords:** Atrophic gastritis; *H. pylorii*; incisura angularis; intestinal metaplasia; the updated sdyney system.

Atrophic gastritis (AG) and intestinal metaplasia (IM) are preneoplastic conditions for gastric carcinoma and mostly related with *Helicobacter pylorii* (Hp) infection. The annual incidence for gastric cancer for gastric atrophy is 0.1% and for IM 0.25% in Europe[1]. In TURHEP study, *H. pylorii* infection is 82.5% in Türkiye[2]. Therefore, early detection of premalignant conditions is important in endoscopic examination.

In the present guidelines, there are some inconsistencies about the approach of taking biopsy sampling from gastric mucosa without visually detectable lesions. The updated Sydney system for classification and grading of gastritis rec-

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ommends five gastric biopsy sites, one each from the middle antrum (within 2–3 cm from the pylorus on the lesser and greater curvatures), two from the body (lesser curve and the greater curve approximately 8 cm from the cardia), and one from the incisura angularis[3]. Taking five biopsies is time consuming for the endoscopists and pathologists some circumstances. Furthermore, the additional value of biopsy from angularis is unclear. MAPS I guideline indicates that in addition of an incisura biopsy to corpus and antrum biopsies specify little additional information withal more costs[4]. Some studies show that the premalignant changes (atrophic and metaplastic) appear in the angulus initially. The mostly studies show severe changes can be occurred in the angulus.

We conducted the study to evaluate the significance of the incisura angulus biopsy in detection of pre-neoplastic conditions.

## Materials and Methods

A total of 998 patients (559 female), who underwent upper gastrointestinal tract endoscopy at the Gastroenterology Department of Haydarpaşa Numune Training and Research Hospital between 2018 and 2019, were enrolled into the study retrospectively. Exclusion criteria of the patients were as follow: Gastric cancer, gastric ulcer, upper gastrointestinal bleeding, and post-gastrectomy. The use of proton pump inhibitors was not accepted as exclusion criterion. If more than one gastroscopy was performed in the same patient, only the first report was included in the study. Fujinon EG-590 WR videoendoscopes and disposable endoscopic biopsy forceps (Galena) were used.

Totally, five biopsies were taken from gastric mucosa (two from antrum within 2–3 cm from the pylorus on the lesser and greater curvatures, two from the body, lesser curve and the greater curve approximately 8 cm from the cardia, and one from the incisura angularis) according to the updated Sdyney system. Normal-appearing mucosa biopsies were taken to study only. Biopsy specimens from each sites were separately and immediately fixed in 10% formaldehyde solution.

Sections were stained with hematoxylin and eosin dye and the modified giemsa method to determination of *Helicobacter pylorii* infection. The score of activity, chronic inflammation, glandular atrophy, IM, and *H. pylorii* colonization were conducted on a visual analog scale based on the updated Sdyney system (0=none,1=mild,2=moderate, and 3=severe).

Continuous variables are expressed as mean±SD, while discrete variables are expressed as n (%). IBM SPSS Statistics for Windows, Version 25.0 was used for calculations.

## Results

Nine hundred and ninety-eight patients (559 female; age range 18–91 years, 51.13±15.2) were enrolled in the study. First part of our study, we searched how many patient had chronic activity, inflammation, *H. pylorii* infection, atrophy, and IM. Biopsies from the incisura angularis; 939 patients (94.08%) had chronic inflammation, 441 patients (44.18%) showed activity, 421 patients (42.18%) had *H. pylorii* infection, 101 patients(10,1%) had IM, and 38 patients (3.8%) showed atrophy. Biopsies from the antrum; 404 patients (40.48%) had *H. pylorii* infection, 172 patients (17.23%) had IM, and 34 patients (3.4%) showed atrophy. In the corpus biopsies; 406 patients (40.68%) had *H. pylorii* infection, 100 patients (10.02%) showed IM, 35 patients (3.5%) had atrophy. Table 1 shows the number of histological findings (IM, atrophy, and *H. pylorii*) only in incisura, only in antrum, and only in corpus.

Second part of our study, we compared the degrees of preneoplastic conditions (atrophy and IM) according to visual analog scale. Mild atrophic changes were most frequently observed in the antrum, while severe atrophic changes were revealed in the incisura. Metaplastic changes (mild, moderate, or severe) in the antral mucosa had the highest incidence rates than incisura and corpus. Table 2 shows the number of patients by degree of atrophy and IM.

**Table 1.** The number of pre-neoplastic conditions (intestinal metaplasia, atrophy, and *H. pylorii*) only in incisura, only in antrum, and only in corpus

| Preneoplastic conditions | Only in the incisura | Only in the antrum | Only in the corpus |
|---|---|---|---|
| Intestinal metaplasia | 24 | 94 | 46 |
| Atrophy | 15 | 14 | 18 |
| *H. pylorii* | 15 | 21 | 19 |

**Table 2.** Number of patients by grade of atrophy and intestinal metaplasia only in the incisura, only in the antrum and only in the corpus

| Preneoplastic conditions | Incisura | Antrum | Corpus |
|---|---|---|---|
| Atrophy | | | |
| Mild(1) | 17 | 23 | 15 |
| Moderate(2) | 16 | 11 | 17 |
| Severe(3) | 6 | 3 | 3 |
| Intestinal metaplasia | | | |
| Mild(1) | 44 | 145 | 83 |
| Moderate(2) | 6 | 13 | 9 |
| Severe(3) | 11 | 16 | 8 |

## Discussion

IM and glandular atrophy are premalignant conditions for intestinal type of gastric adenocarcinoma. Surveillance of risky patients and early detection of premalignant lesions are important[4,5]. Affecting of both antrum and corpus is considered to be higher risk for carcinoma. Unlike published studies in Europe, detection of *H. pylorii* infection is important in developing countries. In developing countries, *H. pylorii* infection prevalence is more than 70%[6]. According to our study, *H. pylorii* infection value was 48%. The reason for the low value of *H. pylorii* infection may be that patients continue proton pump inhibitors during gastroscopy. Several studies have recently revealed relationship between *H. pylorii* infection and gastric cancer. In many studies, incisura angularis is considered an early area for the development of premalignant conditions in patients with *H. pylorii* infection. Treatment of *H. pylorii* infection does not regress IM and atrophy but can slow down. Premalignant lesions associated with *H. pylorii* infections have been shown mostly in the antrum and incisura in biopsy specimens[3,7]. In our study, *H. pylorii* infection is shown more in incisura than antrum or corpus. Nevertheless, some studies show that incisura angularis biopsy is concerning minimal additional information with more costs. White light endoscopy is poor in distinguishing and diagnosing premalignant conditions; hence, the high definition endoscopy with chromoendoscopy is recommended for precancerous conditions and early neoplastic lesions[8]. However, in real life, it may not be possible to work with such endoscopes in every center. Incisura angularis biopsy can be considered to detect premalignant condition in high-risk patients especially in cases where white light endoscopy is available for non-targeted biopsies. For surveillance, incisura biopsy should be considered before its cost.

Our results showed that taking routine incisura biopsy in addition to antrum and corpus biopsies provide little information. Similar to our study, Eriksson et al.[9] stated that routine incisura biopsies can be neglected for obtainable little information. MAPS II recommended two biopsies from corpus and two biopsies from antrum[8].

Our results demonstrated that severe atrophic changes were seen in the incisura angularis than antrum and corpus. Metaplastic changes were seen more in antrum than incisura or corpus, respectively. This is because presumably one of two biopsies, which can be taken from lesser curvature of antrum, and the other one can be taken from incisura angularis. De Vries et al.[10] demonstrated that the highest prevalence of premalignant lesions (AG and IM) were shown in the incisura angulus in non-targeted intragastric biopsies. Zhang et al.[11] showed that incisura angularis was more reliable for the diagnosis of atrophy or metaplasia than antrum or corpus.

Routine biopsy of the incisura angulus would provide little additional information than antrum and corpus biopsies; however, severe premalignant conditions are more prominently in the incisura angularis biopsies. Taken biopsies from only antrum and corpus can be missed severe premalignant lesions (atrophy or metaplasia) in high-risk patients.

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