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## Caustic ingestion in adults: Accuracy of endoscopic and inoperative findings to estimate gastrointestinal injury depth

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### Abstract:

**Background:**Crucial in the initial evaluation and management of patients who have ingested corrosives is endoscopy. There is some discrepancy between endoscopic grading of corrosive burns and pathologic grading as a gold standard of diagnosis. The objectives of this study are to assess specificity and sensitivity of endoscopic grading and surgical gross pathology as a vital tool for surgical decision making.

**Methods:**patients with grade 2 and 3corrosive burn based on endoscopic examinations undergo surgical exploration, grading and biopsy taking or esophagogastrectomy since ten years ago. Endoscopic and pathologic data registrations retrieved for each patient and specificity and sensitivity of each endoscopic grade was analyzed **Results:**Ninety four patients with mean age of 35 years old and corrosive ingestion were identified with 11.7 %at grade 2 and 21.2 %at grade 3 endoscopy. There 84 %suicidal attempts. Specificity of endoscopy at grade 2 is 48 %and sensivity is 63.%. These are 68 %and 95 %in grade 3 respectively .**Conclusion:**Accuracy of endoscopic mucosal injury for surgical decision making is not satisfactory. Surgical exploration and esophagogastrectomy based on surgical pathology or endoscopic grading may be futile. At future finding of a new approach is essential.

**Keywords :**Corrosive injury ,Endoscopy, Inoperative Findings, Pathologic Findings

**Introduction:**

Ingestion of a corrosive substance produces an injury to the gastrointestinal tract and it is difficult to evaluate the severity and prognosis of this injury. Crucial in the initial evaluation of patients with corrosives ingestion is gastro esophageal endoscopy (EGD) [1]. [Endoscopic or in operation misdiagnosis of injury depth leads to complication such as inappropriate management and unnecessary resection. Misdiagnosis of burn depth based on burn degree, endoscopic or inoperative, leads in a complication due to inappropriate management or unnecessary resection] [2,3]. [According to studies, EGD, with least insufflations and retro-flexion avoidance, within 12 hours and no later than 72 hours after caustic ingestion is considered safe and it should be avoided from 5 to 15 days after caustic ingestion due to risk of perforation] [1,2,4]. [Several grading systems developed to predict the injury outcome, but Zargar's grading system that is introduced in 1991 is now most accepted standard for management planning] [1]. [This classifying system is based on mucosal injury observation. Inoperative findings including tissue color and consistency, as a decision making guide for resection, have not considered as a guide for resection] [5]. [This study was performed to assess the accuracy of EGD and inoperative findings in determining the depth of post caustic ingestion injuries, and compare the obtained results with pathologists' estimation of this issue.

**Materials and methods:**

Out of 118 patients with the history of caustic agent ingestion admitted to Lohman Medical Center, between 1999 and 2006. Patients who underwent emergent surgery for any cause without performing endoscopy, and who did not have pathologic tissue examination were

excluded (n=18). (Endoscopy with a standard upper GI endoscope performed by experienced physicians within 24 hours of ingestion without retro-flexion and sedation. Mucosal damage graded using a modified endoscopic classification described by Zargar et al. Patients with injury grade II or higher underwent surgical exploration, resection or biopsy and gross pathologic grading. Pathologic classification defined as table 1. Necrosis reaching at least to circular layers of muscularis propria considered as third degree injury. Endoscopic degree of damage and intra operative surgeon judgments are compared with burn depth based on pathologic examination. Specificity and sensitivity of each examination calculated.

**Results:**

Ninety four patients with mean age of 38, male to the female ratio of 1.4 included. Eighty four percent of them ingest the corrosives intentionally. Endoscopic Grade 2 burn was 28 case and 7 cases of them were true positive. Endoscopic Grade 3 has 26 cases and 19 cases of them were true positive. False positive in grade 2 is 40 % and in grade 3 is 16. % Their false negative was 7.6 % and 47 % respectively [table 1, 2]. [Specificity of endoscopy at grade 2 is 48 % and sensitivity is 63. % Specificity of endoscopy at grade 3 is 68 % and sensitivity is 95 % respectively.

Table 1:

pathology	True negative	False positive
Endoscopy		
Grade 2	7	21
Grade 3	19	7

Specificity and sensitivity of intra operative finding can't be calculated because of the lack of uniform finding classification tools.

#### Conclusion:

There are many controversies about management of corrosive ingestion. These patients have so many complication<sup>7</sup> (and surgical resection of esophagus and stomach are the complex surgical procedure with the wide range of complications,<sup>8,9,10</sup> .(Endoscopy is not without its limitations. It is difficult to evaluate the depth of any burn by observing superficial epithelial necrosis. If a severe burn is encountered in the upper third of the oesophagus, the scope is not passed beyond this point. In this case, it will be difficult to ascertain the degree of injury to the rest of the oesophagus. The area of burn may not be visualised, thus delaying the diagnosis) .<sup>11</sup>(

Based on our study endoscopy is not an accurate tool in this regard, especially in grade 2 .New methods of evaluation of injury depth introduced recently such Technetium-99m pyrophosphate scintigraphy<sup>13</sup> .(Others have attempted the use of endoscopic ultrasound to improve the accuracy of diagnosis. However, Chiu et al did not find concomitant use of endoscopic ultrasound (EUS) useful in improving the accuracy of predicting early or late complication of stricture . )<sup>14</sup> (Intra operative finding is diverse and needs sufficient experience.

However, if there were any uncertainty about the viability, a second-look operation was performed within 36 hours for decision making) <sup>10</sup> .(More conservative approach in grade 2 recommended.

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