**INTRODUCTION**

- Patients with Barrett’s esophagus (BE) are enrolled in surveillance programs for detection of dysplasia and/or early cancer.
- Histopathologic diagnosis of BE associated dysplasia has poor inter-observer agreement (Kappa values) even amongst experienced GI pathologists.
- Published estimated for kappa values in the reading of dysplasia in BE have varied between 0.36 – 0.78.
- WATS procedure uses minimally invasive brush biopsy technique for acquiring wide area tissue sampling of BE tissue.

**OBJECTIVES**

To assess inter-observer agreement among pathologists in the diagnosis of BE and dysplasia using the WATS computer-assisted analysis technique.

**METHODS**

**Dataset:**

- 149 slides were selected by a pathologist who did not participate in study.
- Study slides included BE with no dysplasia (n=109) and dysplasia (n=40).

**Study group:**

- Study slides were randomly distributed to four pathologists trained in analysis of WATS samples.
- Each pathologist completed a standardized CRF for each BE slide evaluated, grading them as non-dysplastic, low-grade dysplasia (LGD) or high-grade dysplasia or esophageal adenocarcinoma (HGD/EAC).

**Statistical Analysis:**

- Analysis was performed using STATA version 10 (College Station, TX).
- Using published range of kappa values for histopathological diagnosis, we assumed a minimal level of reliability (pO) of 0.35 and an expected rho value (p1) of 0.55.
- Sample size of 60 slides using 3 reviewers would be sufficient to maintain power of 80% with an alpha 0.05.
- Kappa values were graded based on Landis and Koch scale.

**RESULTS**

- A total 149 BE slides were evaluated in a blinded fashion by 4 pathologists. The slides included: no dysplasia (n=109), LGD and HGD/EAC (n=40).
- Overall mean Kappa value for all three diagnoses for four observers was calculated at 0.86 (95% CI 0.75-0.97)
- The Kappa value (95% CI) for HGD/EAC was 0.95 (0.88-0.99)
- The Kappa value (95% CI) for IND/LGD was 0.74 (0.61-0.85)
- The Kappa value (95% CI) for no dysplasia was 0.88 (0.81-0.94)

**CONCLUSIONS:**

- The diagnosis of Barrett’s esophagus and associated dysplasia using the WATS technique has a very high inter-observer agreement.
- WATS technique appears to be significantly better inter observer rates compared to previously published data using standard histopathology.
- This technology represents a significant improvement over current histopathology assessment.