THE ROLE OF CUSP OVERLAY IN THE PREVENTION OF TOOTH FRACTURES Department of Faculty Dentistry, "EMU UNIVERSITY," Uzbekistan

Scientific Supervisor: Assistant Professor **Abduganiev U.B.**
4th-year Dental Student: **Usmanova M.D.**

Research Objective: To evaluate the impact of cusp overlay during the restoration of posterior teeth on reducing the risk of hard tissue fractures following the treatment of extensive carious lesions.

Materials and Methods: An analysis of 24 clinical cases involving the restoration of molars and premolars with extensive coronal defects was conducted. Patients were divided into two groups:

- **Group I (n=12):** Tooth restoration without cusp overlay (direct composite restorations).
- **Group II (n=12):** Tooth restoration with functional cusp overlay (indirect composite/ceramic overlays).

The following parameters were evaluated:

- Presence of enamel cracks;
- Signs of occlusal overload based on occlusion analysis;
- Incidence of tooth fractures during a 6-month follow-up period;
- Subjective patient complaints. Clinical evaluations were performed at 1, 3, and 6 months.

Research Results: In **Group I**, enamel microcracks were identified in 3 cases (25%), and partial tooth wall fractures were observed in 2 cases (16.7%). In **Group II**, no cases of complete fracture were recorded, and microcracks were identified in only 1 case (8.3%). Patients in Group II reported a more even distribution of masticatory load and an absence of discomfort

during occlusal contacts. The data obtained indicate a reduction in the risk of structural tooth damage when weakened cusps are overlaid.

Conclusions:

1. Functional cusp overlay facilitates the redistribution of masticatory load and reduces stress concentration within the tooth tissues.
2. Restoring teeth without cusp overlay in cases of extensive defects is associated with a higher risk of crack formation and fractures.
3. The use of overlays with cusp coverage is a justified preventive measure in cases of significant loss of hard tooth tissues.
4. This method can be recommended for widespread clinical use in the treatment of posterior teeth.