

# Hair Restoration Protocol Using Mesenchymal Stem Cell (MSC) Exosomes



## Objective:

To enhance hair growth and scalp health using MSC-derived exosomes by promoting follicular regeneration, reducing inflammation, and stimulating cellular repair.

## Patient Selection Criteria:

- Patients with androgenetic alopecia (male and female pattern baldness)
- Patients with traction alopecia or stress-induced hair loss
- Individuals experiencing hair thinning due to aging
- Patients with mild to moderate alopecia areata
- Not suitable for patients with complete baldness or scarring alopecia

## Pre-Treatment Preparation:

### 1. Patient Consultation & Assessment:

- Conduct a detailed medical history and scalp examination.
- Identify any contraindications (e.g., active scalp infections, uncontrolled autoimmune conditions, pregnancy).
- Take baseline photos for documentation.

### 2. Pre-Treatment Recommendations:

- Advise patients to stop using blood-thinning medications or supplements (e.g., aspirin, ibuprofen, omega-3) for 3–5 days before the procedure.
- Wash hair with a mild, sulfate-free shampoo the day before treatment.
- Avoid alcohol and smoking for at least 24 hours pre-procedure.

## Treatment Protocol:

### 1. Scalp Preparation:

- Cleanse the scalp with an antiseptic solution.
- Apply a topical numbing agent (e.g., lidocaine/prilocaine cream) for 20–30 minutes, if necessary.
- Remove excess numbing cream and sanitize the area before exosome application.

### 2. Delivery Methods:

- Microneedling Method:
  - Use a dermaroller (0.5–1.5 mm) or a microneedling device (Dermapen or similar) to create microchannels in the scalp.
  - Apply MSC exosome solution evenly over the treated area and gently massage for better absorption.
- Injection Method:
  - Using a 30G needle, inject 0.1–0.2 mL per site at a depth of 2–3 mm into the affected areas.
  - Space injections approximately 1 cm apart.

- **Topical Application** (For Post-Microneedling or Post-Injection Enhancement):
  - After either method, apply an additional thin layer of exosome solution to maximize absorption.

### **Post-Treatment Care:**

- Advise patients to avoid washing their hair for at least 24 hours.
- Avoid strenuous exercise, excessive sweating, or swimming for 48 hours.
- Refrain from using harsh hair products (e.g., minoxidil, dyes, or alcohol-based products) for at least 72 hours.
- Encourage gentle scalp massage to enhance exosome penetration and circulation.
- Provide a post-treatment serum containing exosomes or growth factors for continued home care (optional).

### **Contraindications & Precautions:**

- Avoid treatment in patients with active scalp infections, cancer, or severe autoimmune diseases.
- Do not perform the procedure on patients with a history of keloid formation in the treatment area.
- Use caution in patients with a history of allergic reactions to biological products.