

## Cure of Osteonecrosis and its Pathology

**Kunal Joon\***

Noida International Institute of Medical Sciences, Haryana, India

\***Corresponding Author:** Kunal Joon, Noida International Institute of Medical Sciences, Haryana, India.

**Received:** April 12, 2024

**Published:** May 16, 2024

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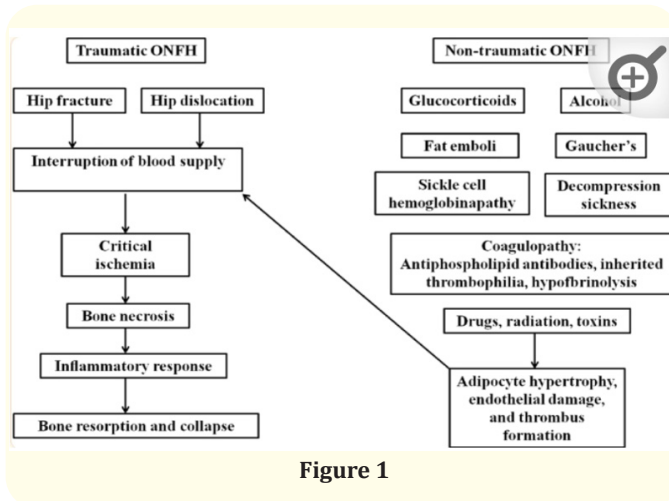
### Abstract

Its a progressive diseases with many complications like severe pain in the affected area and necrosis of the bone and also its deals with its treatment with help of stem cell therapy and clear understanding of stem cell therapy.

**Keywords:** Osteonecrosis; Femoral Head; Cell Therapy; Cell Implantation; Stem Cells; Tissue Engineering

### Problems Osteonecrosis treatment

Etiology of osteonecrosis is described in figure 1.



**Figure 1**

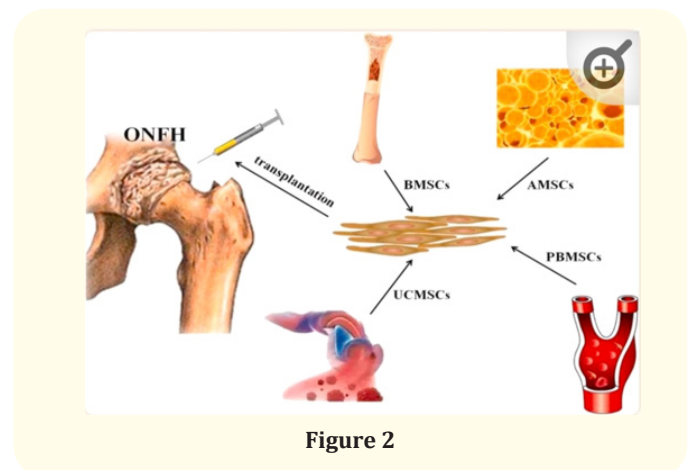
### Insufficient diagnosis of osteonecrosis

In early stages no observed symptoms are observed except the slight pain and no obvious findings are present in X ray also.

Example of osteonecrosis femoral head necrosis.

Treatment of Femoral head necrosis through stem cell transplantation.

### Cell source



**Figure 2**

Source of stem cells for transplantation for ONFH: osteonecrosis of the femoral head are BMSCs: bone marrow-derived mesenchymal stem cells; AMSCs: adipose-derived mesenchymal stem cells; PBMSCs: peripheral blood-derived mesenchymal stem cells; UCMSCs: umbilical cord-derived mesenchymal stem cells.

### Implantation method

Core decompression method and MSC transplantation.

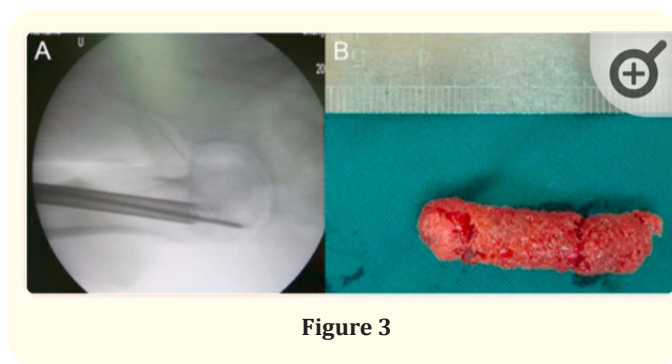


Figure 3

Combination of core decompression and bone marrow buffy coat for treatment of ONFH. (A) The X-ray showed that core decompression is performed by the Kirschner wire and 10-mm diameter of trephine in the operation; (B) The long cylindrical bone obtained from core decompression was implanted into the bone tunnel after mixing with bone marrow.

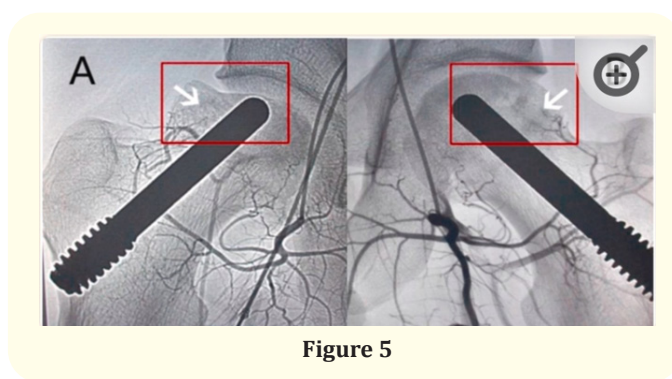


Figure 5

### Discussion

- Osteonecrosis of femoral head
- Cure of osteonecrosis of femoral head
- Stem cell therapy

### Conclusion

Through stem cell therapy osteonecrosis was cured and patient was relieved.

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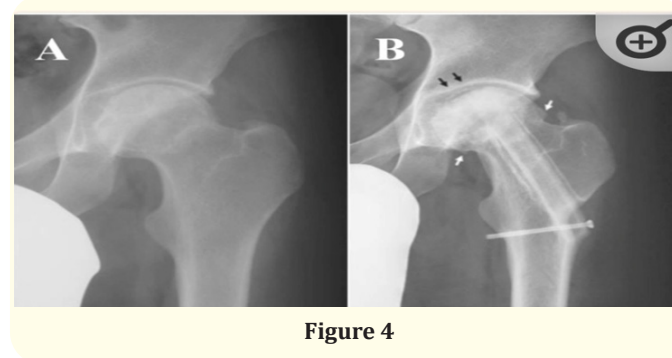


Figure 4

It shows the Combination of arterial perfusion of PBMSCs and porous tantalum rod for treatment of ONFH (36 months after operation). (A) Without a vascular regeneration was observed in the control group, and the box showed a collapsed femoral head; (B) Vascular regeneration around femoral head was discovered in the combination treatment group, and the box showed an intact and round femoral head.

It shows the Combination of transplantation of autologous MSCs cultured with  $\beta$ -TCP ceramics and a free vascularized fibula for the treatment of ONFH. (A) A large necrotic area of femoral head was found in the preoperative X-ray. (B) Although the sclerosis area and osteophytes were found in the latest X-ray, the patient did not feel uncomfortable.