Avascular osteonecrosis in young patients: Long distance follow up of treatment with shock waves

Author:
Sergio Russo, Emanuele Astarita, Umberto Russo, Vincenzo Scarpato, Clemente Servodio Iammarrone

Institutions:
University of Naples Federico II Department of Surgery, Orthopaedics, Traumatology and Emergency via S.Pansini 5 Naples – ITALY

Device and producing company:
Modulith SLK, Storz Medical A.G.

Introduction:
The use of shock waves (SW) in young patients affected with bone osteonecrosis is not uniformly accepted. This is because there is the possibility of damaging the growth nucleus thereby causing a secondary deformity. With this study the AA show the results obtained in young patients treated with shock waves: follow up between 5 and 11 years. Specific precautions were used to avoid secondary deformity.

Methods:
A lithotripter with a very small focus dimension (diameter 0.5cm) was used (Modulith SLK from Storz A.G.), with a pressure field convergence angle of 60° and focal distance of up to 16 cm. Careful targeting was obtained by using Rx-ray and the "window" was checked by in-line eco system. Every treatment session consisted of 4 applications (3,000 shots with maximum energy power of 0.1/0.4mJ/mm2. There was a minimum of 2 and maximum of 4 sessions.

Results:
The results show good vascular response, pain disappearance and good range of recovered articulate movements in the absence of deformity.

Discussion:
The shock wave effect on bone vascularization has been shown in various research. The goal of this paper is to open discussion about whether or not to treat young patients with this technique. The results show absence of deformity of the treated area. This is due to the use of low energy power, a small focal point, very careful aiming to avoid crossing the growth nucleuses. For these reasons it is very important to eliminate all movement of the young patient during treatment in order to avoid pain during the treatment.

Conclusion:
The authors conclude this technique represents a safe method of treatment but it is necessary to adhere to all the required conditions.