**Objective:** To evaluate the indication, correction and complication of posterior smith peterson osteotomy on multi-segment for correction of kyphosis in ankylosing spondylitis.

**Methods:** Form October 2006 to July 2009, 18 patients with kyphosis in ankylosing spondylitis were treated with surgery. There were 16 male and 2 female with an average age of 27.3 years (22-36 years old). The average case history was 8.6 years (5-14 years). Stable without pain: 7 cases. Active with pain: 11 cases. The kyphosis involved the thoracic and lumbar vertebral body. The average Cobb angle is 73.1° (62°-102°), 3 patients are combined with scoliosis. The average scoliosis Cobb angle was 33.6° 18°-42°. All the patient didn't have the severe hip joint disease. All patients underwent posterior smith peterson osteotomy on the multi-segment apex vertebra and trans-pedieular fixation, Autogenous and Allogenic bone grafting under general anesthesia. The operating time, blood loss, correction rate, bony grafting, complication, VAS scale, motion range and Patient's satisfaction were taken for evaluation.

**Result:** There was no major complication of neurological injury and hardware failure. The average surgery time was 192 mins (140-260 mins) and average blood loss volume of 633 ml (450-920ml). The multi-segment osteotomy was continuous osteotomy. The highest level is T67, the lowest level is L34. The average performed levels were 3.2 (2-4 levels). All patients were mobilized with BOSTON brace 7 days post-operatively and discharged 14 days post-operatively. All patients were followed at 3, 6, 9 months post-operatively for bone grafting, correction, fixation evaluation via phone, mail, post the recent X-image. The average follow up time was 3.2 years (1-3.5 years). The pre-operative average kyphosis curve was 73.1°, one week after operation average kyphosis curve was 12.8° (-10°-24°), correction rate was 82.5%. the average kyphosis curve at the latest follow-up was 16.6°, the loss of correction was 3.8°. The pre-operative average scoliosis curve of the patient with scoliosis was 33.6°, one week after operation average scoliosis curve was 5.9°(0°-9°), correction rate was 82.4%. There was no loss at the latest follow-up. All the patient had achieved bony fusion 3 or 6 months after operation. There were 4 cases with the complications (22%). Included: intercostal neuralgia: 1 case; screw lossening: 1 case, superficial skin necrosis: 2 cases, cured within one week of treatment. The average VAS scale was from 5.2 pre-operatively to 2.1 after operation. and less 1 at the latest follow-up. At the latest follow up, the patient's satisfaction was 100% (18/18).

**Conclusion:** Kyphosis in ankylosing spondylitis always appeared to be curved deformity. The posterior smith peterson osteotomy on multi-segment for correction of this disease is a effective methods with shorter operation time, less blood loss and lower complication rate.