

# DRUMMOND INSTRUMENTATION IN THE SURGICAL TREATMENT OF IDIOPATHIC SCOLIOSIS

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## GENERAL CONSIDERATION

Harrington instrumentation has been extensively employed world-wide in the surgical treatment of idiopathic scoliosis for 25 years.

This procedure seems to be disadvantageous in that it has no corrective effect on thoracic lordosis, and is considered to be difficult as it necessitates postoperative cast immobilization to be employed. With the advent of such instrumentation as Drummond, Harri-Luque and CD not only has it been possible to correct lordosis but the need for employing postoperative cast immobilization has been eliminated. We have attempted in this application method of ours present Drummond instrumentation and the results we have obtained in those cases in which we applied this method.

## SURGICAL TECHNIQUE

**DRUMMOND :** Following subperiosteal exploration, an anatomically fitting square-holed hook is placed inferiorly and a bifid or pedicular hook superiorly. Fusion in the articular facet is effected. Holes one drilled with the use of special awls at the base of every spinous process following facet fusion. Metal buttons with two holes one placed both on the concave and convex sides of each hole. When double folded wires are bassed both through concave and convex sides, they are also inserted through the second hole of the opposite nut, thereby completing the same procedure at every level.

Harrington's distraction rod is distracted. Following distraction wires are tightened by 3/16 Luque's rod on the convex side first at the level of the top vertebrae, then proximally and distally, thus meeting at the top vertebrae again. Following this procedure Harrington's

distraction rod is used to effect tightening. Laminar portions not included by the bases of wires are decorticated and replaced by fresh autogenous bone graft obtained. The patient is ambulated without any support at postoperative 3 days.

## FINDING AND RESULTS

Out of 15 of our cases 8 are female and 7 male, the youngest being 13 years old and the oldest 17, with a mean age of 14.5 years.

In Drummond instrumentation the surgery lasted for about 180 minutes and blood loss was approximately 900-1000 cc.

Correction degree was about % 65-70 and there was no postoperative correction loss, wire breakage, hook loosening and infection.

Our patients were given TLS orthosis for 3 months postoperatively taking into consideration the socio-economic conditions of our country.

The shortest follow-up period in our cases was 6 months and the longest 16 months, with a mean follow-up of 9 months.

## DISCUSSION

In recent studies related with idiopathic scoliosis, it is implicated that thoracic lordosis is an important component of thoracic scoliosis. Therefore, it is necessary for the procedures to be used in the surgery of scoliosis but to correct the curvature at the frontal plane and to restore to normal physiological position those curvatures distorted at the sagittal plane. Harrington instrumentation has no corrective effect on thoracic lordosis. This instrumentation also causes lumbar lordosis to be decreased, and serious problems that might arise in the future (2,3,4,6,7,8). Following treatment by Harrington instrumentation postoperative cast immobilisation is necessary for 6-9 months. To eliminate these two disadvantages of Harrington instrumentation, such instrumentations as Luque, Harri-Luque, Drummond and CD have been recently employed. Luque instrumentation is mostly utilized in paralytic scoliosis, whereas in idiopathic scoliosis, Harri-Luque is used, which is a combined modification

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of both Harrington and Luque instrumentation. As for the results by CD reported to be obtained in that terms, it is stated that the risk of neurologic deficit is 3 times more than that in Harrington. (1) There are no long-Term results related with this instrumentation. In Harri-Luque instrumentation, correction is maintained through sublaminar wires by giving distraction rod normal physiologic angles of kyphosis and lordosis. The greatest disadvantage of this method is that sublaminar wires break and fall into the canal. While being inserted or after insertion, thus leading to neurologic deficits. With this method, the risk of neurologic deficits. With this method, the risk of neurologic deficit is stated to be 3-4 times more than that in Harrington (7,8).

However, in Drummond system in order to resolve the risk of neurologic deficit reported to be at high rates in Harri-Luque system, sublaminar wires are replaced by metal buttons inserted through opposing the base of every vertebral spinous process, thus developing an interspinous segmental instrumentation (2,3,4,6). Furthermore stabilization is increased by fixing the wires on the Luque wire on the convex side.

When this instrumentation is compared with Luque and Harri-Luque, the risk of neurologic deficit is very low, and besides a more rigid and stable fixation is obtained. The correction of thoracic lordosis by Drummond, does not seem to be as satisfactory as Harri-Luque and Luque systems. As corrective forces are applied both axially and transversally in Harri-Luque as well as in Drummond, correction is reported to be more satisfactory compared to that obtained by Harrington instrumentation.

We have obtained a correction of almost %70 with Drummond instrumentation. In order for the instrumentation to be used in the surgery of scoliosis to be ideal. It should be cheap, should be easily applied, should have no risk of neurologic deficit, should obtain maximal correction. Should need no postoperative external fixation, should be able to correct curvatures both at frontal and saggital planes. Unfortunately none of the methods employed today seem to embrace all of these features in combination, but only some.

We are of the opinion that Drummond instrumentation has more qualified characteristics both in quantity and in quality.

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