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THE EXPERIMENTAL AND CLINICAL STUDIES OF DEPROTEINIZED CALF BONE TRANSPLANTATION

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According to the shortage of the homogenous bone supply, our experimental and clinical studies on bone transplantation have been concentrated upon the heterogenous bone, for several years.

As far as osteogenesis is concerned, the heterogenous bone is ranked as inferior graft material, but with the proper deproteinizing process, the bone organic factors, which may act either on osteogenesis or on foreign body reaction will be removed, and heterogenous bone may change into the useful scaffold material for the new bone formation, from the host.

The young calf bone was chosen as the graft material.

The deproteinization was performed using the H_2O_2 , Ether and Ethylenediamine process.

The chemical analysis and histological studies revealed that deproteinization, preserving the necessary collagenous construction, was suitable for bone transplantation.

This processed calf bone—we named it Kobe bone—has been studied in animal experiments. The uneventful and non-reactive incorporations and new bone formations were certified by the histological, roentgenological, and tetracycline fluorescence studies.

The sufficiently reduced antigenicity which was comparable to the autogenous cancellous bone was certified by the anterior eye chamber graft experiment and regional lymph-node reaction studies.

Following the satisfactory experimental results, Kobe bone transplantations have been applied to clinical cases since January 1962.

The clinical cases comprised 17 different bone tumors, 36 fractures, 7 bone and joint tuberculosis, 8 osteomyelitis and some other orthopaedic diseases.

The follow up studies were undertaken on 72 cases.

The results were as follows :

Bony union (clinically and radiologically)	
success.....	60
failure	6
uncertain.....	6 (not enough lapse of time to evaluate)
infection	3

No significant reactions by the Kobe bone graftings were obtained in the clinical, serological examinations.

We were fortunate enough to obtain histological examinations, of the grafted sites, from 3 patients, and smooth incorporation of the Kobe bone to the host and

sufficient callus formation were present.

CONCLUSION

Experimental and clinical studies of the deproteinized calf bone were presented.

Kobe bone is a useful material for clinical purposes, with its unlimited supplies, easy production and preservation.