

The result of hallux valgus treatment by osteotomy sub-capital of Hohmann

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Citation

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Abstract

The purpose of introduction the treatment of the hallux valgus by osteotomy under capital of Hohmann is extra articular be to correct in only once the deformations related to the disease. Material and method 284 feet were operated according to this technique. 220 sick old from 15 to 70 years. the wedge-shaped résection is higher than 30° in 23% of the cases, of 16 with 30° in 67% of the cases, and the lower than 15) in 10% of the cases. It is carried out on the level of the collar of the first métatarsien, wedge-shaped, at internal and lower base: of varisation and supination (what corrects the valgus and the pronation of the big toe), of translation and inflection. the fixing of the osteotomy is done by two central-medullary parallel pins and an osseous trans stay allows the immediate resumption of walk with support. a special sandalette avoids very internal stress on the large ortiel operated in order not to obstruct the cicatrization of the plicaturée internal capsule and of the side reintegration interns at the base of P1 of the tendon of the supply main of the big toe which one often finds in plantar abnormal position. Results That determines a shortening of the 1st métatarsien (lower than 5 mm in 45% of the cases from 5 to 10 mm in 47% of the cases and more in 13% of the cases), compensated functionally by the osteotomy of inflection which improves the contact on the ground of the first head métatarsienne and of the pulp of the big toe. The external translation ($\frac{1}{4}$) of diaphyse in 54% of the cases, $\frac{1}{2}$ diaphyse in 37% of the cases and more in 6% of the cases) corrects the métatarsus varus and decreases the width of the before-foot, making disappear the onion and its painful symptomatology in the shoe. the osseous consolidation of the osteotomy is obtained into 2 to 3 months. 4 pseudarthroses, is 1,5% required an operational recovery by Clerc's Office. We regret with control with one year 16% of repetitions of the hallux valgus higher than 25° , occurred during the first 3 months. the factors supporting are, into pre operational, the importance of AI initial deviation of M1-P1 higher than 40° or the deviation inter phalangeal P1-P2 higher than the 15 and per-operational insufficient external translation, most effective being of a half diaphyse. Conclusions the osteotomy under capital corrects in only once all the deformations related to the hallus valgus

INTRODUCTION

The hallux valgus [1] presents pains troubles in the bunion region and the associated metatarsalgium impede the putting on one's shoes as well as the walk by oneself, the correction of various deformities at the hallux will make both the putting on one's shoes and the walk alone easier. The osteotomy sub capital of Hohmann corrects in only once all the deformities related to the hallux valgus

Figure 1

Photography I : perioperative view



The objectives in this work is to study both the therapeutic variations and improvements to set up surgical indications according to the degree of deformity.

MATERIAL AND METHOD

THE SERIES

It is about a retrospective study of 220 files that is 284 feet including 64 bilateral. 90% of the series were females and 10% were males.

48 were operated on both feet, 23 simultaneously on both sides, the others in a few months of interval; the age varied between 15 and 70 years with an average of 53 years. The average revision was 8 years with extremes from 5 to 10 years.

284 cases are presented in this work from the foot Surgery department at the orthopedic and traumatology Center of Strasbourg.

ANAESTHESIA

The interventions were carried out more and more under loco-regional anaesthetic, in particular by truncal block of the sciatic nerve at the popliteal hollow level, which ensures an indolence during 36 hours, we note 40% of truncal block, 19% of loco regional intravenous anaesthesia, 14% of rachi anaesthesia and 27% of general anaesthesia.

SURGICAL PROCEDURE [2]

The way is at first internal; the neck of the 1st metatarsal is unblocked in sub- periosteal without opening the articulation. The adductor of the big toe which slipped in plantar position is disintegrated in a distal way

Figure 2

Photography II : incision



With the oscillating saw, we resect a corner at lower and internal base. Hohmann intervention ensures the correction in only one site, by an extra-articular gesture, all the deformities of the hallux valgus, by carrying out an osteotomy

Figure 3

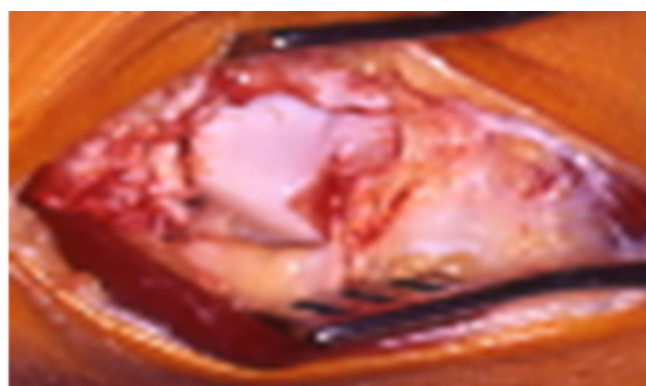
photography III : Exposition of the first metatarsal



- of variation and supination, which corrects the valgus and the pronation of the big toe, by bringing back the sesamoid to their place and the axis of the big toe parallel with the axis of the foot i.e. the 2nd metatarsal;

Figure 4

Photography VI : Osteotomy sub-capital external and lower base



- of external translation decreasing the width of the metatarsus without resection of exostosis and cancelling the metatarsus varus

- the deflection to compensate for the defect of support of the 1st ray and its metatarsalgium.

We make the osteotomy by synthesis with 2 parallel pins and a stay by a trans-bone resorbable wire stay. Then putting back in tension of the strained internal capsule

Figure 5

Photographies: V & VI: correction of the deformity with fixing by a stay



and reintegration of the adductor laterally in good position with the internal side P1.

Owing to a stable osteosynthesis of the osteotomy, the post-operative immobility recommended by Hohmann was used only in 27% of cases. The resumption of immediate walk by using a special light sandal so that there is no valgus pressure on the big toe was possible in 73% of cases of that series. Currently, it is systematic.

The support on the metatarsal head is well sustained. The post-operative inter digital variation is corrected in a few weeks.

RESULT

The duration of hospitalization is 8 days on average, with a heightening of the foot. 60% of cases are hospitalized less than 8 days, 29% from 8 to 12 days and 4% only more than 15 days.

The cicatrization was impeded in nearly 25% of cases cutaneous necrosis and 13% of delay, cicatrization delayed at 3 weeks).

The bone consolidation was obtained in less than 2 months in 48% of cases, from 2 to 3 months in 42% of cases and more than 4 months in 8% of cases, 4 pseudarthroses re operated that is 1,5% of cases.

The resumption of usual shoe, because of oedema, is often delayed at the 3rd/4th month in 57% of cases, later in 43% of cases and less than 3 months in 29% of cases. The cuneiform resection is in 23% of cases of more than 30°, in 67% of cases from 16° to 30° and in 10% of 15°.

The external translation was of ¼ of diaphysis in 54% of cases, a half of diaphysis in 37% of cases and more in 6% of cases. (Zero in 3% of the cases).

That corrects the metatarsus varus, thus angle M1/M2 were standardized below 10° in 69% of cases with the concluding control (check- up), and whereas 51% presented a

metatarsus varus preoperative superior to 10°. The external head translation of M1 decreased the width of the metatarsus on comparative radiographies in support by the measurement of the width m1/m5.

Figure 6

Table 1 : Width M1 M5 59 Hohmann

	Post op	Per op
< than 80 mm	5%	49%
81 to 90 mm	65%	44%
> than 90 mm	30%	7%

This angle > than 28°, was noted in preoperative and in 32% of cases during the last control (revision).

The ideal reduction let persist a valgus of less than 10° of the big toe. It was insufficient in ¼ cases with an angle M1/P1 > to 13°, which can support the repetitions (recurrences) with deformity > to 25°.

The osteotomy with bone resection leads to a shortening of M1 of variable importance according to the resected corner (40% have a shortening of less than 5 mm, 47% from 5 to 10 mm and 13% from 10 to 15 %).

The harmful effect of this shortening is compensated by the flexing osteotomy which gives again a support on the 1st ray what avoids or improves the metatarsalgium.

The pathological pronation of the hallux valgus disappears by the derotation of the toe during the osteotomy, what brings back the metatarsal head on the sesamoids.

This can be seen on radiographies full face in support where the position of the sesamoid is considered to be normal in 25% of cases, and moved to the 1st degree in 67% of the cases, to the 2nd degree in 7% of the cases, and to the 3rd degree in less than 1% of the cases. That encourages us to better reduce the head by translation derotation

The operation of Hohmann improves greatly these subjective signs as it is shown on tables II and III.

Figure 7

Table 2: Per operative Clinical Signs of Hohmann 284

	0	+	++
Pain bunion	0,8%	13%	79%
Métatarsalgies	55%	30%	15%
Trouble while walking	28%	65%	7%
Trouble in putting on one's shoes	3,5%	21,5%	75%

Figure 8

Table 3: Post operative clinical results of Hohmann 284

	0	+	++
Pain bunion	85%	12,5%	2,5%
Métatarsalgie	75%	25%	0%
Trouble while walking	78%	10%	2%
Trouble in putting on one's shoes	84%	14%	2%

From an objective point of view, we note a normal mobility of the big toe only in 24% of cases, which is decreased in 49% of cases; very stiff cases were detected in 27% of the cases, what encourages us to require more functional rehabilitation.

On the other hand, the support on the ground of the pulp of the big toe objectified by the sheet of paper test is excellent in 85% of cases, which helps the unfolding and the impulse of the step. In 9% of cases the contact on the ground can be carried out but without any strength. Among 5 cases, the big toe remains above ground-level.

TOTAL RESULTS

According to our quotation including the objective and subjective criteria defined by Debaëne, they are satisfactory. Thus 34% are classified Pass with 80% upwards, 3 5% Pass with 70 to 80%, 26% Pass with 50 to 60%, and 5% Mediocre.

DISCUSSIONS

The delay of cicatrization and the duration of the bone consolidation for hallux valgus treatment are unquestionable disadvantages of the osteotomy of Hohmann compared with the other methods.

The per cutaneous technique seems less invasive [3]

We deplore 16% of the hallux valgus recurrences which occur during the first 3 months. They are linked to the importance of M1/P1 initial angle and also, preoperatively with an external insufficiency of translation of the sub capital osteotomy, thus we note 14% of recurrences for hallux valgus from 26° to 39° and 41% of recurrence among 39 cases and 40% whose gain of correction of the deformity is nevertheless higher than 20°, which is very appreciable.

The recurrence also depends on the presence of an inter phalangeal hallux becoming pathological according to Gauthier (4) beyond 10°, justifying a reintervention by a P1

complementary osteotomy, fixed by a suture skin clip of Barouk (5) or by pins with this hallux valgus inter phalangeal excessive, we now associate with the operation of Hohmann an osteotomy of P1 if P1/P2 angle is higher than 15°.

Actually, the patients come for a consultation especially for the pain felt at the bunion level as well as the troubles occurred while putting on one's shoes. The correction of M1/P1 angle is not the most significant for the treatment but the reduction of the metatarsus width, which we can obtain by the translation-without rotation from M1 head.

Both the bursectomy and the exostosectomy are not necessary contrary to Mitchell practice [6]

To fight against the detrimental effects (misdeeds) of shortening, Wilson [7] proposes an oblique osteotomy but the flexing osteotomy compensates it well.

CONCLUSIONS

Hohmann intervention helps in regulating in only one site all the deformities related to the Hallux valgus. The cuneiform osteotomy sub capital of the first metatarsal at internal and lower base whose reduction in variation of rotation brings back the big toe in the axis of the foot and the head of the first metatarsal to the top of the sesamoids, the external translation reduces the width of the metatarsus and makes disappear the friction inside the shoe, the flexing gives again a support with the first ray improving the metatarsalgium and helping the impulse of the step.

References

1. Hohmann G- Fuss und Bein: ihre Erkrankungen und deren Behandlung. JF Bergmann. München, (1951) RFA
2. Copin G - traitement de l'hallux valgus par l'ostéotomie sous-capitale du premier métatarsien, Orthop traumatology (1991)- 40-46
3. Gibson J, Piggott H Osteotomie of the neck of the metatarsal in the treatment of hallux valgus. (1962) J. Bone Jont Surg [Br] 44 : 349-355
4. Gauthier G. Technique personnelle du traitement chirurgical et conservateur de l'halux valgus Soc Française Med chir du pied (1979) P 43
5. Barouk IS - Indication et technique des ostéotomies du gros orteil – Med Chir du pied 1988,4 :147-157
6. Mitchell C, Fleming JL, Allen R, Glenney C Sanford GA (1958) Ostetomy-bunionectomy for hallux valgus. J Bone Joint Surg [Am] 40 : 41-60
7. Wilson JN - Oblique displacement osteotomie for hallux valgus. (1963) J Bone Joint Surg [Br] 45 : 552-556

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