# SUBJECT :

Young Lady, born 21.02.1982
2004, falling down stairs, breaking the scapholunate ligament Right wrist

She received emergency at 3 months with direct surgical repair (Anchor into lunate, with pinning)

Failure of direct open suture!

After the non-improvement in April 2004, the second intervention took place in December 2004 to modified Brunelli ligamentoplasty

Failure of ligamentoplasty!

In 2006, Four bone fusion, Progressive Radio-carpal osteoarthritis

Currently it has relatively well preserved mobility
Extension 60 against 85

Flexion 55 against 85

IC 30 against 40, IR 20 against 30

Full pronation-supination
FM 10 kgf against 30
**Pain VAS 9 to 10**
**Dash 68.18**

Dear friends

Please let me know what will be your proposal regarding on this case !!

Prof. Christophe MATHOULIN
Paris

# DISCUSSION :

Dear Christophe
Cher Maître

My proposal in such cases is a capitate resurfacing procedure with the CMI pyrocarbon implant
Because she is very painfull and still has a good wrist range of motion

Greatings

Nicolas Dreant
Nice France

-

Wow, what a challenge at that young age with that amount of pain, Christophe ☺

How about denervation?

Sincerely yours

Ilse Degreef
Belgium

-

If the patient has pain would perform a wrist arthroscopy to classify the lesion.
The treatment options could be :
1)Arthroscopic debridement and ligament suture of dorsal remanent and cast 6-8 weeks
2)Arthroscopic debridement and inmovilization with cast 6.8 weeks
3)Arthroscopic debridement and E-L pinning for 6 to 8 weeks

Greetings from Buenos Aires
Alvaro Muratore
Buenos Aires

-

For me Total wrist denervation. To young for a prostheses or Total wrist arthrodesis.

Best regards

Michel

Pr M. LEVADOUX
Orthopedic Surgeon Hand surgeon
Professor of the Val de grâce
Hand and upper Limb Surgery

Mini invasive surgery
Hand wrist and elbow arthroscopy
Clinique St roch
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83000 Toulon
FRANCE

-

??? soft tissue procedures have already failed, better if plan B is not the same as plan A, 10yrs after there is not going to be much remnant of anything; the case has reached the stage of skeletal reconstruction, but not quite clear from the outline what "indication" is asked for ?!; if it is intractable pain (dorsal ? ulnar ? radial ?) it will likely boil down to the usual pain vs. motion decision (after poss. playing around a while with denervations, arthroscopic debridements and the like) ...

Arno R. Schleich MD
Plastic Surgery
Madison, Mississippi 39110, USA

–

Salut Proffesseur Christophe!
I think that is possible to try wrist denervation, because the patient is too young and she has a very good ROM.
Best regards

Carlos Morales Sanchez-Migallon

-

Apologies for the previous answer
had not seen the whole case.
In Argentina is very difficult get  prostheses therefore the only options that could provide for a patient with a lot of pain are:
1) Interposition with dorsal capsule
2) Total wrist arthrodesis
As the patient has good mobility it could try a wrist denervation but personally I have not had good results with wrist denervations.
once again my apologies and greetings

Alvaro Muratore

-

southern france's school, as M Levadoux, I'd try to gain a few years with a total  denervation. Eventually in addition with hyaluronic injection

Andre Gay
France

-

What a case.
Christophe, I bet you would love to have a time machine and perform your arthroscopic DCSS repair at the first moment, don't you?
Well, back to reality... I also bet the denervation was already done on the second or third surgery... most surgeons do it, no?
I had recently a case very similar. Same evolution, 2 prior surgeries elsewhere, then I did a 4 courner, and then I had a nonunion and then I revised the 4 courner... And 3 years after, she started with pain and radio-lunate arthritis...
In my case, as in this one, I notice arthritis is more on dorsal part with dorsal osteophite on radius, typical of dorsal impingement after the 4 corner. Probably is more painfull during wrist extension on dorsal aspect, is it?
I performed in such case an arthroscopic ressection of dorsal margin of radius, including osteophite. The patient improved the pain, specially on weight bearing during wrist extension (1 year ago, so far so good). It may be paliative but for such young patient may be a choice for now...

Dr. Gustavo Mantovani Ruggiero
Cirurgia da Mão e Microcirurgia Robotica
-

At the risk of sounding out of sorts after there have been so many treatment suggestions, I think it is essential to provide the forum members with the clinical symptoms and signs in order for them to make sensible decisions. After all we treat patients and not x-rays/scan and it is not possible to advise treatment based on the imaging alone. I presume she has pain arising from the radiocarpal joint, but if so, this should be made clear.

To highlight this, what if the patient had intersection syndrome or another condition and the advice is to perform a wrist replacement!

Best wishes

Robert Farnell

- Well...vas and dash do tell a lot here on the clinical impact of the radiological findings, no? 😊

Ilse Degreef

- I agree with Michel Levadoux. Denervation to safe time. Too young for prosthesis and too good motion for arthrodesis

Alvaro: wrist Prosthesis are available in Argentina. Re Motion is in the local market, though expensive for us.
Regards
Pablo De Carli

-

Dear Christophe,

Denervation is quite a good intervention but not always success , especially on young patients as you know . She is 33 year-old .

Plan A: you do denervation and in case of failure you go for a capitate resurfacing with RCPI implant

Plan B: you go directly for capitate RCPI implant resurfacing with very short Time of immobilization 15 days only and a partial denervation of the Posterior interosseous nerve

Good luck

Dr CHOUGHRI Hussein
Head of the Hand unit
Department of Plastic- Burns and Hand Surgery
Consultant Hand surgeon
University Hospital of bordeaux
Michelet Centre
33000 Bordeaux
France

-

Instead of modified Brunelli may be I will performed scapho-luno-triquetral tenodesis ( with FCR and Mayo flap capsulotomy)
Now may be the best soulution will be Wrist prostheses or Total wrist arthrodesis if painfully and Arthrosis will progress .

Dr Viktor Kamiloski Phd
Traumatologist and upper extremity surgeon

University surgery clinic St Naum Ohridski
Traumatology department
Skopje
Macedonia

-Why my opinion not interested you?!

Best regards once again
Prof. Dr Kamiloski
Macedonia

-

Dear Christophe, Dear colleagues

For me, three  solutions

- New denervation if no denervation surgery in the past

- Interposition with pyrocarbon implant like Amandys (decrease the pain and conserve mobility)

- Total wrist arthrodesis (if we have no other choice)

If the problem is the pain, all the other solution are no sufficient for me

Best Wishes
Christophe Camps
Luxembourg

-

Ciao
denervation could be the right coise, abuot me, but probably ready jet in the last operation, volontary or casually!
Silvia G
Italia

-

I know sounds crazy but in my country one college has some experience with stems cells treatment in joints with mild degenerative changes,knees fundamentally ,She does not work in a private center, is public, free and are dedicated to research.
Her experience shows a significant improvement of pain in patients with good mobility and not very severe changes.
possibly not even present but maybe the future

Gabriel Clembosky

- When my patients ask me about stem cell therapy, I tell them that it is like a formula one racing car parked in front of the hospital - it's certainly the fastest in town but I we don't know how to drive it, and we don't have the key. That means we have no evidence about the current use of stem cell therapy, at least to my knowledge (except for anecdotal evidence). Anybody got more?

Matthias Rau
Australia
-

- Dear Matt ,good comparison , I agree with you in relation to the total lack of evidence.
Gabriel Clembosky
-

The same – I'm the Sport surgeon and we do knees as well. Several times after application of stem cells and growth factors I've generated such as unbelievable scar and arthrofibrosis – that I had to release adhesions as early as 4th post op week.

dr n.med. **Grzegorz Adamczyk**

-

Waw that is interesting! I have always wondered why unprogrammed multipotential stem cells would do what we want them to do
Sure they can choose myofibroblast differentiation on the loose whenever they see the opportunity
Therefore the unpleasant findings of scars and arhtrofibrosis are most interesting (still not what we want...), Grzerorz

We need to find out how to steer them, right?

Up untill now, the F1 expression is correct and intruiging to my opinion, Matt (although very manlike) ☺

Warm regards
Ilse Degreef

-

Denervation

Luis Naquira

--
Three wrist surgery is enough in my opinion...

"On ne viole un poignet qu'une fois !"

.... If possible, sorry for my FRENCH Words but i'm thinking With my little expérience that Wrist and Especially dorsal capsule and ligament are not made for multiple surgery....
And THE surgery must be the good If possible - one shot surgery.

So ... No conflict With screws. Good mobility. Very Young.

The only surgery : denervation for pain if patient accept palliative results

And waiting....

Best regards
**Dr Jérôme VOGELS**
**France**

- fully agree with dr Jerome Vogels...
Erle Weltzer

-

Hi everyone.

Following Gabriel's hints (and many knee surgeons' practice), a possible choice to try could be PRP (platelets-rich plasma) intra-articular injections.
In my knowledge there are no papers about use of PRP on wrist arthritis, but seems of some help in mild knee arthritis.
Considering that wrist has no bearing loads this could be of a temporary help, since the patient is extremely young to have a total wrist and her pain is light/mild.

I know it is not surgery, but all surgical suggestions seem too much for many of us...

Stefano Tognon

-

Dear Prof Mathoulin,

The majority of opinions goes to denervation.
I agree that most of surgeons would have done it already during four-corner fusion or previous capsulotomies BUT, if not, you may have a neuroma of the PIN. Don't you think this may be one of the pain cause? Although the patient has progressed to radialcarpal colapse, a VAS 9/10 is very high for just degenerative cause...
You could perform a therapeutical test with lidocaine injection on the NIP. It would give you predictable result on denervation.

Best regards,

Pedro Matos
Instituto da mão, Coimbra
Hospitais da Universidade de Coimbra, Portugal

-Dear friends,

Many of you consider that the denervation of the wrist has been already made during the former procedures. But pay attention there is a big difference between just a section of the dorsal IO nerve and a real total wrist denervation with 4 skin approaches and a real identification of all the small articular sensitive branches!!!!

So I am quite sure that a total denervation should be efficient on the pain. Our friends from the other side of the Rein river ( Max Haerle) who are very fluent with denervation get probably an idea !!!

Best regards

Michel

Pr M. LEVADOUX – France

- Dear friends

I emphazised the mail from Michel Levadoux. I think to be in France the one who try to give to total denervation a second life after Guy Foucher. We have presented in the meeting of the French society papers about that and a publication has been sent to the JHS European.

It is a good solution but if you perform a complete denervation! Not a partial and if the patient is young it is not a bad solution specially if the ROm and grip strength are correct.

You only have to inform the patient of this option with palliative goal and 70% of excellent and good results.
That's all

Best regards

Dr Michel Rongières
France

- I totaly agree
Michel Levadoux - France

- I perfectly agree with the 2 Michel …

The PIN is responsible for only 60% of wrist innervation .

Ferreres (BJHS 1995) showed that partial denervation (as described by Dellon, interesting only PIN) have a rate of success of good and very good results of 36% where complete denervation (Wilhem's technique re-decribed by Foucher in 89) have … 87% of G/VG results

About tests, the only prospective study published on xylocaine tests (Weinstein AmJHS 2002) showed that there is no statiscally proved relation between results of block and results of surgery, that blocks have a high rate of false positive and therefore blocks provides a high rate of deception for patients.

So for a a young patient, with good strength and mobilities, i would go complete wrist neurotomy by 3 (Dubert 1990) or 4 incisions (knowing that pain relief in 15% of cases may need more than one year – Simon Chir Main 2012).

It doens't burn the bridges for « heavy surgery » in case of failure ….

Best regards,

CR. Rizzo Christophe

- Dear friends

A Former one senior surgeon of the hand of our department asks me to submit to our forum this difficult clinical case
Thank you for your opinion
Dr Michel Rongières
France

SAME CASE BUT SUBMISSION CASE FORUM

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Dear friends

A Former one senior surgeon of the hand of our department asks me to submit to our forum this difficult clinical case
Thank you for your opinion
Dr Michel Rongières
France
-

Dear Michel,

this is a nice case. More things together to solve:

metaphyseal malunion
dorsal malunion in distal part of radius - these are what we see right away

but technically from surgeonś point of view some more:

very short fragment distally for osteotomy and big angle to correct
length discrepancy - dificult to calculate in preoperative planning, so hard to correct radio-ulnar ratio
ulnar position distally?? rotation of distal fragment?? probably good but you never know in these situations.

I think you have to correct it with two osteotomies - one in metaphyseal area for realigning axis of distal metaphysis and second distally to correct volar tilt. You will not be able to correct it with one osteotomy, it will not fit. And at the end it is very difficult to correct radioulnar ratio.

My suggestion is to use Materialise 3D planning and 3D printing technology - this is the case where you need it for proper surgery. It is not easy even with this technology, but that makes it much more easy and precise. And if there is any malunion of distal ulna, you will see it.
I would not go for any kind of ulnar arthroplasty in first setting. He is 16 and if you make proper correction, you get a good result. Probably there will be also instability radio-ulnar, but mostly if you correct length of radius (you prolong it) you tighten soft tissues around radio-ulnar joint and mostly it is not necesary to stabilize it.

I attach a case I solved the same way. It was not that big dorsal displacement and I have over corrected it maybe  litle bit but it was very similar  with a very good clinical result. She is back to all activities without restriction.

Best regards and good luck,

Radek Kebrle

-

Thank your Radek

I add an addendum to your very interesting case: Price for this technology: 999 € + VAT

Contact: Els.Bruynooghe@materialise.be

Best regards

Jean

**Jean F. Goubau MD, PhD**

**BRUGES**

-

Dear Jean and others,

999 euros + VAT is huge amount of money for my patients. I wish I could use this technology for most of distal radius corrections (this would make them more precise) but due to the price I can´t.

But there are indications where I tell my patients that my surgical ability is limited and where even with  exact X rays, CT scans, good 2D planning and good surgery I can´t prove precise correction. And as Prommesberger has shown quality of function is equal to quality of correction.

These arethe cases:
case like one we discussed with huge or multiple deformity
deformities of radius after Galleazi fxs
deformities of both forearm bones after diaphyseal fxs
deformities going through sigmoid notch
and intraarticular deformities (some) - if they are not suitable for arthroscopic assisted treatment

It has its limits, but it has a great potential. And once you use it, you start seeing deformities in 3D.

Best regards,

Radek Kebrl

Czech Republic

-

I think this is - awesome! If one consideres the price of plates and screws, it is actually not that much. Problem remains who pays for it.
Matt Rau
-

Dear Radek,

Dear colleagues,

I would like to suggest you to read this publication. 3D printing could be a very usefull tool for preoperative planning and in this way not such expensive like Materialise 3D.

Best regards,

Ivan Tami

*Surg Innov. 2015 Feb 2. pii: 1553350614547773. [Epub ahead of print]*

*Three-Dimensional Printing of Bone Fractures: A New Tangible Realistic Way for Preoperative Planning and Education.*

*Bizzotto N1, Sandri A2, Regis D2, Romani D2, Tami I3, Magnan B2. [**Pubmed/25646008**]*

***Dr. med. Ivan Tami***
*FMH Chirurgia della Mano*