

Asia Pacific Spine Society (APSS) DePuy Synthes Spine Clinical Fellowship Report

Fellow: Dr. Chih-Wei Chen

Orthopedic Department
National Taiwan University Hospital, Hsin-Chu Branch
Hsin-Chu City, Taiwan

Mentor: Prof. Yukihiro Matsuyama

Department of Orthopedic Surgery
Hamamatsu University School of Medicine
Shizuoka, Japan



Introduction:

I am Dr. Chih-Wei Chen, a young spine surgeon from National Taiwan University Hospital, Hsin-Chu branch. For the past 2 years, I have learned everything from my mentor Professor Shu-Hua Yang. By his introduction, I joined APSS and was luckily chosen as the clinical fellowship this year. When I was informed that my host will be Hamamatsu University School of Medicine, I was a little nervous. Because none of my colleague has been there. Besides, although I have travelled in Japan several times, it's first time I go there for medical expertise. Then, I found I worried too much. Everybody in Hamamatsu University is so kind and helped me for the preparation of my fellowship. There are more than 10 spine surgeons and several graduate students and foreign fellows. We could have good communication in English.

During my stay in Hamamatsu, I learned not only knowledges about spine surgery, but also several other aspects about caring patients. Every week, there are several meeting talking about the treatment plan for their patients. Besides, they also have good connections with their affiliated hospitals. I think it's very important to get the general improvement in spine society. Because there are several differences in our national health insurance and medical care systems, we had good discussion and shared out opinions with each other. The following is my 3-weeks experience in Hamamatsu.

Fellowship Program:

Fellowship Programme/ Tentative Schedule at Host Centers

APSS DePuy Synthes Clinical Fellowship (17th May – 6th June 2018)

(1) Prof Yukihiro Matsuyama, Hamamatsu University School of Medicine, Japan

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:00 am - 8:30 am	Spine Teaching and Journal Club	Pre-Op Conference		Post-Op Conference	
8:30 am - 12:00 am	Spine Clinic	Spine Operation	Hospital Ward (Pre and Post Op assessment)	Spine Operation	Case Discussion
1:00 pm - 5:00 pm	Spine Clinic (nerve block etc.)	Spine Operation	Spine Operation (satellite hospital)	Spine Operation	Spine Operation (satellite hospital)
5:00 pm - 7:00 pm		Spine Operation	Free	Spine Operation	Free
19:00 -	Spine Conference (APSS Clinical Fellow Case Presentation)	Orthopaedic Conference (29th May APSS Clinical Fellow Presentation)	Free	(17th May Welcome Dinner)	Free

**24th May – 27th May Attendance "The 91st Annual Meeting of Japanese Orthopaedic Association"*

Week 1 (5/16 ~ 18)

On my arrival to Hamamatsu train station, Dr. Hiroki Ushirozako has already been there for me. He is both a graduate student from Hamamatsu University and a spine surgeon. He was assigned to take care of me during my stay in Hamamatsu, and he did it well. I took his car to the dormitory – Handayama Kaikan and he gave me a brief introduction on the way.

Unfortunately, it happened to be the annual meeting of anesthesiologist this week, no elective surgery was allowed. In Japan, only difficult or complicated cases will be referred to University hospital. Thus, only an old lady who sustained a fall with right distal radius and right sacral fracture has emergent surgery on Thursday, May 17th. In Hamamatsu University, usually, there are more than 2 spine surgeons in every surgery. They are so skilled and finished the operation in a short time.

In this night, they held a welcome party for me and Dr. Neelesh, another foreign fellow from India. They are nice people and showed good hospitality. On Saturday, May 19th, there was an annual academic meeting of Hamamatsu University Hospital and affiliated hospitals. Also the meeting is in Japanese; Dr. Omura helped us by translating important concepts of the speeches. We really appreciated it.



Week 2 (5/21 ~ 25)

Monday, May 21st

Every Monday morning, there is Journal Reading meeting for spine surgeons. Besides, they also present their researches and experiences from international

conferences at this time. After meeting, there is ward round. In Taiwan, we only see our own patients. But, here, patients was assigned to 4~5 groups. Each group has a doctor responsible for it. They see all the patients in the group, no matter what kind of specialty it belongs to. In this way, doctors know each other's patients. After ward round, it's time for spine clinic. I don't understand Japanese, so it's so hard to catch the conversation between patient and Prof. Matsuyama. But during interval from one patient to another, Professor Matsuyama will give me some brief translation and show some interesting images.

Monday night is another important meeting for spine team. They have a tradition to order some curry rice as dinner. In this meeting, everyone presents this own cases, interesting or complicated. For those patients who already have operation schedule, you could find detailed evaluations, including various plain radiographs (standing, sitting, traction view...), CT, and MRI. During the discussion, many different ideas were proposed, and we all learned a lot from this.

Tuesday, May 22nd

In Hamamatsu University Hospital, elective orthopedic surgeries are usually arranged on Tuesday and Thursday.

First case is a 76-year-old female with lumbar degenerative kyphoscoliosis. In the past, surgeon here tried to use 3-column-osteotomy (3CO; e.g. pedicle subtraction osteotomy [PSO] & vertebral column resection [VCR]) to correct this kind of deformity. However, a great portion of their patients had complications besides huge blood loss. Thus, they use staged surgery, now. In the first stage, they go anteriorly to perform lateral interbody fusion (LIF). Patients could have partial correction of their deformity. Patient was put in body cast after surgery. Plain radiography is checked for re-evaluation the severity of deformity. Usually, 2nd stage surgery is performed 1 week later. If the deformity has improved, patient may need posterior column osteotomy (PCO, e.g. Ponte osteotomy or Smith-Petersen osteotomy [SPO]) and instrumented fusion. In that way, they successfully reduced the complication rate and most of the patient could stand the surgery well.

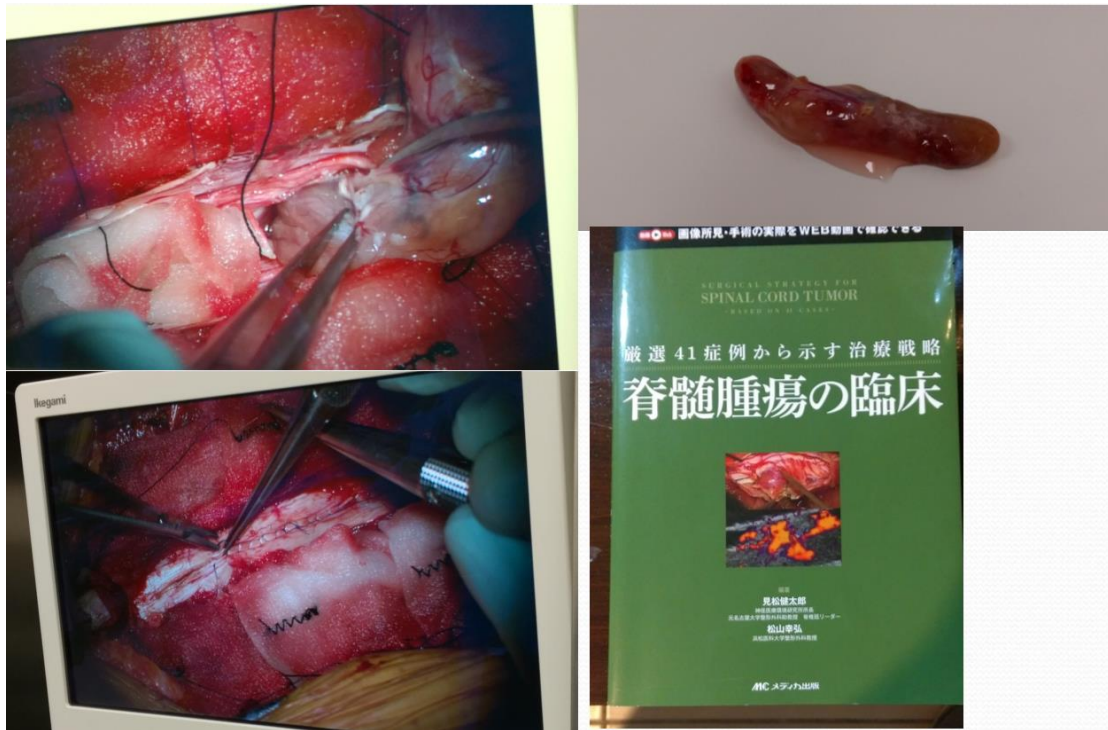
There are some tricks for LIF. First, they use wide exposure instead of small incision to prevent rare but devastating complications (such as vessel injury). IONM (intra-operative neuro-monitoring) is applied to avoid lumbar plexus injury. The guide-pin should be inserted in the middle of disc, and disc preparation should keep along the central axis. When inserting the cage, two blade-like instruments are placed at the interfaces of cage and end-plates. They help to keep the bone graft inside the cage. This instruments are designed and used only in Japan.

Second case is a 61-year-old female who was going to receive 2nd stage correction surgery. In Japan, allogeneous bone grafts are not easily to get. Thus, they retrieved all the spinous processes inside the fusion level. Besides, longer extent of neural decompression was done. Because this kind of patients are often old and have poor bone quality. So, they use cantilever technique to get an ideal lumbar lordosis and thoracic kyphosis. First, they fixed the lowest part of rod first, that means iliac screw, S1 and lower lumbar region. Then, fixed the upper part of by gradually tightening of the nuts to the screws; that prevent the screw pull-out. The other trick is use 4-rods routinely to decrease the breakage rate.



Typical Case of Staged Deformity Correction

Third case is 55M with ependymoma with bleeding. It's a kind of intra-dural extra-medullary spinal tumor. In Taiwan, some orthopedic spine surgeons do this kind of surgery. Most of the time, neurosurgeons take care of these patients. But in Hamamatsu, they even deal with intramedullary spinal tumor. Amazing! Professor Matsuyama gave me a Textbook he writes about spinal tumor treatment. Besides, there are a lot of video chips of their own surgical technique. Wow! Maybe I should learn it in the future.



The fourth case today is high thoracic trauma, with T3-5 burst fracture. Dr. Togawa and Dr. Oe used O-arm navigation to accomplished C7 to T8 posterior fixation. When we use O-arm navigation, we always look at the monitor to adjust our direction of inserting screw. But as for my observation, Dr. Togawa can find the direction of pedicle correctly by his experience, the other people just verified this on the monitor for him. Even we have modern technique, the old-school things are still quite useful.

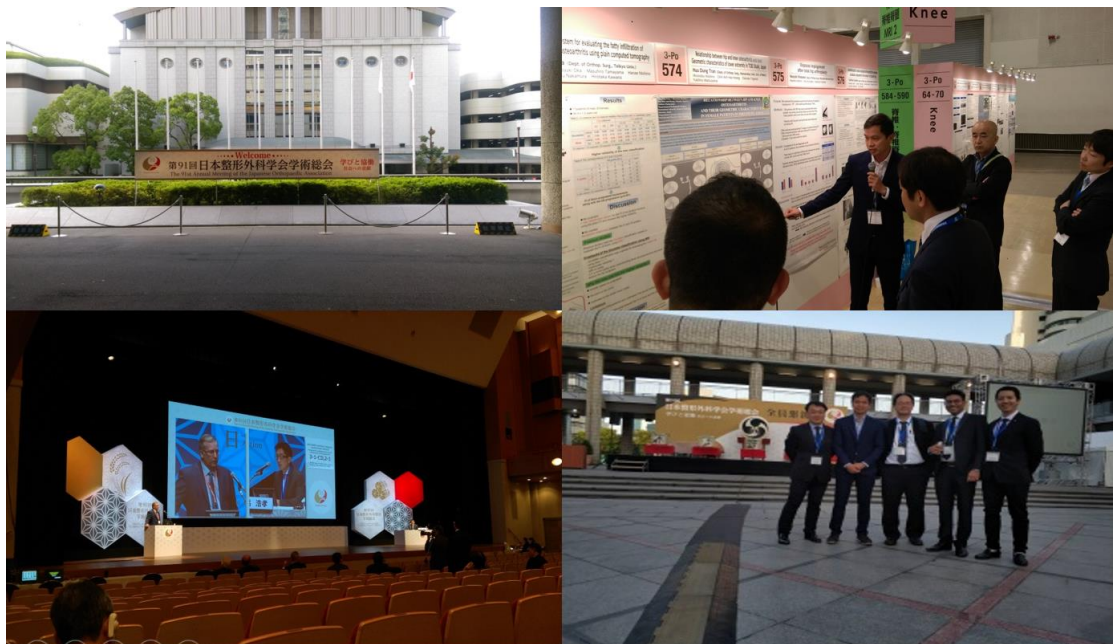
Wednesday, May 23rd

On every Wednesday and Friday, when there is no scheduled surgery in Hamamatsu University Hospital, the spine surgeon will go to the affiliated hospital to see outpatient clinic patient and performed common spine surgery, such as simple decompression, PLIF, and cervical laminoplasty. This day, I went with Dr. Banno to Enshu hospital. Dr. Fujita had a case of 55-year-old male with L5/S1 spondylolisthesis

with spinal stenosis. They performed posterior decompression, L5/S1 PLIF, and percutaneous pedicle screw insertion. Dr. Fujita and Dr. Banno had great teamwork and completed this surgery smoothly and quickly.

Thursday ~ Sunday, May 24th~27th

This weekend, it happened to be the 91st Annual Meeting of the Japanese Orthopaedic Association. All the orthopedic doctors except the poor duty guy all went to Kobe to attend this meeting. Professor Matsuyama kindly supported the traffic fee and accommodation for Dr. Neelesh and me. It was a big conference with four exhibiting hall. Although the majority of the contents were in Japanese, there were 20% of the sessions in English or with real-time translation. Besides, there were so many invited speakers all over the world. I benefited from several talks, such as Dr. Dong-Ho Lee's anterior decompression technique for OPDD decompression. He came from Ulsan University, Korea. Professor Kern Singh from Rush University, United States, shared his precious experiences in the developing spinal MIS skills. Professor Christopher Ames from UCSF, United States, gave a wonderful speech on pathology and surgical strategy for C-spine deformity. At the end, I want to thank Professor Matsuyama again to provide us a great opportunity to join this great event.



Tuesday, May 29th

First case was the same lady who received 1st stage surgery last week. She was going to receive 2nd stage operation today.

For the 2nd case, I joined the other deformity surgery. This patient was a

64-year-old female, who have degenerative kyphoscoliosis. It's the 1st stage and we performed XLIF from L1~L4.

Wednesday, May 30th

This day, I visited Juzen hospital when Dr. Togawa. Most of the spine surgeons in Hamamatsu University Hospital have part time job the in the affiliated hospital. Dr. Satou wants to refine his surgical skill and learns from Dr. Togawa. However, today he let me to be the first assistant that I had more opportunity to do more in the operation. In University Hospital, because there are so many spine surgeons. Even you scrubbed in, you have little things to do, it's unbearable for a surgeon, haha~ So, let me thank you again, Dr. Satou.

The first case was 70-year-old female with cervical spondylotic myelopathy. Because ossification of the posterior longitudinal ligament (OPLL) is quite common in Japan, here, laminoplasty is a "common" surgery and often performed at affiliated hospital. Dr. Togawa and my institute both use French-door technique, which splits the lamina in the mid-line. There only a few differences between our techniques. First, here, they remove the spinous process and use high speed bur to split the lamina, but we keep the spinous process and use mini-saw to complete the splitting. The other difference is we use hand-shaped allogenuous to keep the lamina open. Here, they have artificial bone substitute in various sizes. Besides, Dr. Togawa developed the suture for fixed the graft. It composed by two strings with different color, which is quite handy.

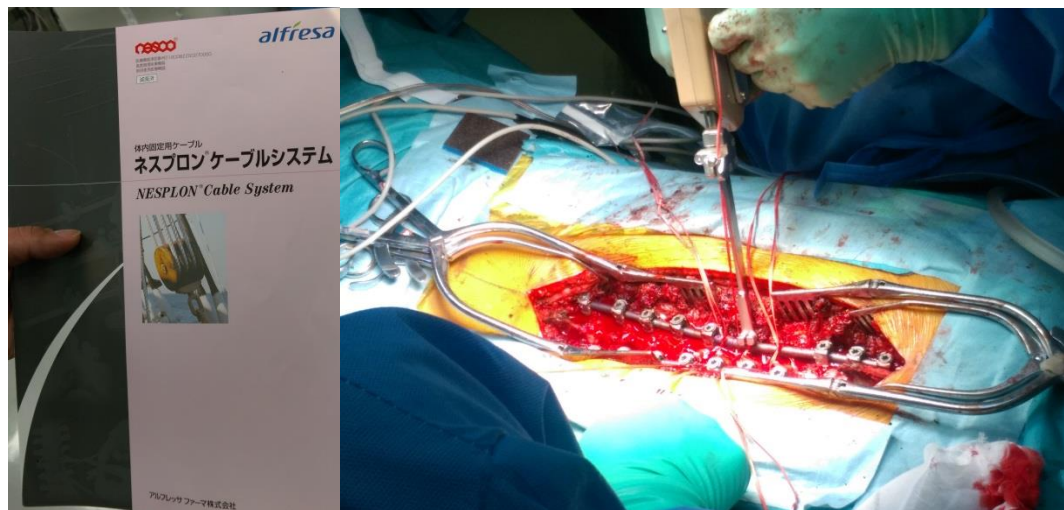


The second case was 62-year-old female with L4/5 spinal stenosis, came for simple decompression. The final case was more interesting. It was a 46-year-old male who

received L3-S1 decompression and fusion surgery a couple months ago. Patient came to Dr. Togawa's clinic due to suspected surgical site infection. Dr. Togawa arranged radiograph-guide aspiration immediately and pus-like fluid was drained. Thus, we performed debridement surgery at the same day. How efficient!

Thursday, May 31st

There were two surgeries on this day. The first one was the common L4/5 spondylolisthesis with spinal stenosis and instability. The decompression, PLIF, and fusion surgery was performed smoothly and quickly. The second surgery was a 19-year-old lady with adolescent idiopathic scoliosis (AIS). Because the concave side and the upper thoracic pedicles are often small and sometimes even deformed, they used O-arm navigation for the upper thoracic screws insertion. Besides, NESPLON cable system, a Ultra-high molecular weight polyethylene (UHMWPE) tape, was applied for sublamina wiring. This procedure tries to improve the thoracic hypokyphosis.



Monday, Jun 4th

In the morning meeting, I presented my study about the technique of “Bilateral Wiltse Approach through One Single Skin Incision for Lumbar Spine Surgery” and get precious opinion from my audience.

Tuesday, Jun 5th

It was my last day in Hamamatsu University Hospital. There were two cases. First

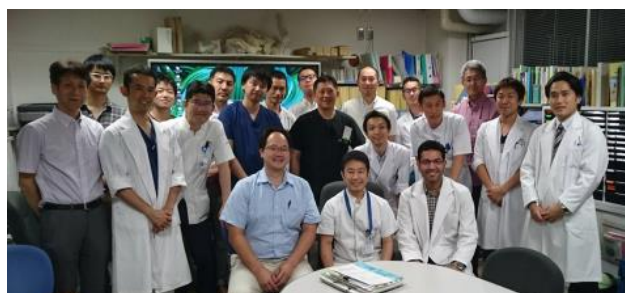
one was a 74-year-old male with OPLL came for laminoplasty. At the end of surgery, Dr. Banno use sonograph to make sure that there is no more compression over the spinal cord.

The second patient was 64-year-old female with degenerative scoliosis, who was scheduled for 2nd stage posterior correction and fusion. Spine surgeons here have strong teamwork. Actually, I envy them. Let me explained with the photo below. In the picture, there are 5 doctors inside, including 3 experienced spine surgeon. No wonder patients get good care here.



At the End:

Thanks APSS and DePuy Synthes Company give me a great opportunity to see the other world. It's a good stimulus for a young surgeon. It help me to extend my vision. Besides, in Hamamatsu, there are so many good role models I could learn from and pursue in the future. During my stay, I also made so many friends, staffs or fellows, who all have enthusiasm in the spinal surgery. Three weeks might be short, but it's enough for me this time. I also want to thanks everyone in Hamamatsu. They took good care of me and I appreciate it much. ありがとうございます！



Fellowship Logbook:

Date	Day	Age	Sex	Diagnosis	Procedure	Surgeon	My Role	Hospital
May-18	Thu	76	Female	1. Right distal radius fracture, s/p Debridement and ESF fixation 2. Right sacral fracture, Zone I	1. ORIF with Accumed locking plate and excision of ulnar head 2. Lumbo-pelvic fixation	1. Dr. Omura 2. Dr. Banno	Observer	Hamamatsu University Hospital
May-22	Tue	70	Female	1. Lumbar degenerative scoliosis 2. Old AIS, s/p posterior fusion	XLIF, L2-5	1. Prof. Matsuyama 2. Dr. Yoshita	Observer	Hamamatsu University Hospital
May-22	Tue	61	Female	Lumbar degenerative scoliosis, s/p XLIF	2nd Stage posterior correction and instrumented fusion	Dr. Banno	Assistant	Hamamatsu University Hospital
May-22	Tue	55	Male	Lumbar intra-dural extra-medullary tumor, r/o ependymoma	Tumor excision	1. Prof. Matsuyama 2. Dr. Yamato	Observer	Hamamatsu University Hospital
May-22	Tue	55	Male	1. Right clavicle fracture 2. T3-5 burst fracture	1. ORIF with 2. Posterior fixation (C7-T8) with O-arm navigation	Dr. Togawa	Observer	Hamamatsu University Hospital
May-23	Wed	55	Male	L5/S1 spondylolisthesis with spinal stenosis	L5/S1 PLIF	1. Dr. Fujita 2. Dr. Bano	Observer	Enshu Hospital
May-29	Tue	70	Female	1. Lumbar degenerative scoliosis 2. Old AIS, s/p posterior fusion	2nd Stage posterior correction and instrumented fusion	1. Prof. Matsuyama 2. Dr. Bano & Dr. Arima	Observer	Hamamatsu University Hospital
May-29	Tue	64	Female	Degenerative scoliosis	XLIF, L1-4	Dr. Togawa	Assistant	Hamamatsu University Hospital
May-30	Wed	70	Female	Cervical spondylotic myelopathy	Laminoplasty	Dr. Togawa	Assistant	Juzen Hospital
May-30	Wed	62	Female	L4/5 spinal stenosis	Posterior decompression	Dr. Togawa	Assistant	Juzen Hospital
May-30	Wed	46	Male	1. Wound infection 2. L4/5 & L5/S1 spondylolisthesis, s/p L3-S1 decompression and fusion	1. Wound aspiration under intensifier 2. Wound debridement	Dr. Togawa	Assistant	Juzen Hospital
May-31	Thu	56	Male	L4/5 spondylolisthesis with instability and spinal stenosis	1. L4/5 PLIF	1. Prof. Matsuyama 2. Dr. Arima	Observer	Hamamatsu University Hospital
May-31	Thu	19	Female	AIS	Posterior correction and fusion	1. Dr. Yoshida 2. Dr. Togawa	Observer	Hamamatsu University Hospital
Jun-05	Tue	74	Male	Cervical myelopathy	Laminoplasty	1. Dr. Bann 2. Dr. Yasuda	Assistant	Hamamatsu University Hospital
Jun-05	Tue	64	Female	Degenerative scoliosis	2nd Stage PCF	1. Dr. Togawa 2. Dr. Yoshida & Dr. Arima	Observer	Hamamatsu University Hospital