

Case Report

Use of PCSO-524[®] with Physical Rehabilitation to Regain Mobility in Dogs after Femoral Head and Neck Excision

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Antinol (PCSO-524[®])
Case Study Contest 2020

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Abstract

An 8 years old Pomeranian dog showed acute non weight-bearing lameness of the right hind limb after high jumping. Preliminary examination identified pain at the right hip and radiographic images revealed right hip luxation.

Femoral head and neck excision was performed for the surgical treatment.

Multimodal treatment scheme deployed after the surgery consisted of nutraceutical PCSO-524® and physical rehabilitation using laser class 4, exercise such as Cavaletti exercise, balanced board, walking on treadmill, and hydrotherapy including walking under water and swimming.

Evaluation of the treatment during follow-up showed decreased pain score and severity of lameness, which was consistent with the owner's report that described improvement of weight-bearing of the right hind limb and the quality of life.

Keywords: Femoral head and neck excision, Hip luxation, PCSO-524®, Rehabilitation

Introduction

Femoral head and neck excision (FHNE) is used for treatment of various diseases such as severe osteoarthritis, avascular necrosis, hip luxation and hip fracture. The diseases cause pain and limited joint function due to decreased weight-bearing ability that results in muscle atrophy and poor life quality.

After the surgery, scar tissue is formed between femoral head and hip joint socket as a cushion to absorb the force from movement. There are cases of severe or chronic pain that occurs before the surgery and results in muscle atrophy and loss of mobility.

To restore function of the leg after the surgery, **multimodal treatment**, which consists of rehabilitation therapy and nutraceutical supplement, is deployed to accelerate the recovery and resumption of the normal life. The rehabilitation after femoral head and neck excision includes several techniques, for example, control of pain using laser class 4 or therapeutic ultrasound, exercise such as balancing ball or balancing board to enhance standing and weight shifting, hydrotherapy such as swimming and under water treadmill walking.

The rehabilitation scheme is designed for individual dogs under consideration of veterinarians. PCSO-524® now is becoming more common as nutraceutical supplement that is effective for rehabilitation therapy. The supplement is extracted from New Zealand Green Lipped mussel and contains high amount of omega-3 and omega-6, therefore it is effective against pain and inflammation. It is an alternative to non-steroidal anti-inflammatory drugs (NSAIDs) for **long-term or high dosage treatment** since it has no side effects found in NSAIDs use.

Case history

An 8 years old female Pomeranian dog weighed 5 kilograms was admitted at a veterinary hospital due to signs of acute non-weight bearing of the right hind limb after a high jump 2 days before. The owner informed that the dog had never shown any signs of walking disorder.

Physical examination

Normal vital signs were found by physical examination and the orthopedics examination found lameness of the right hind leg with lameness score 4, which means totally loss of weight bearing in every gesture including standing, walking and running.

Palpation of the right hip identified pain score 4 based on severe pain and expression of yelping and aggression when the injured area was palpated. No other signs of injury were found.

Diagnostic plan and Results

Radiographic examination was used for further diagnosis based on information from case history and the preliminary orthopedics examination. Displacement of right femoral head was identified and diagnosis of right hip luxation in craniodorsal direction and osteoarthritis of both hips were concluded (Figure 1 and 2).

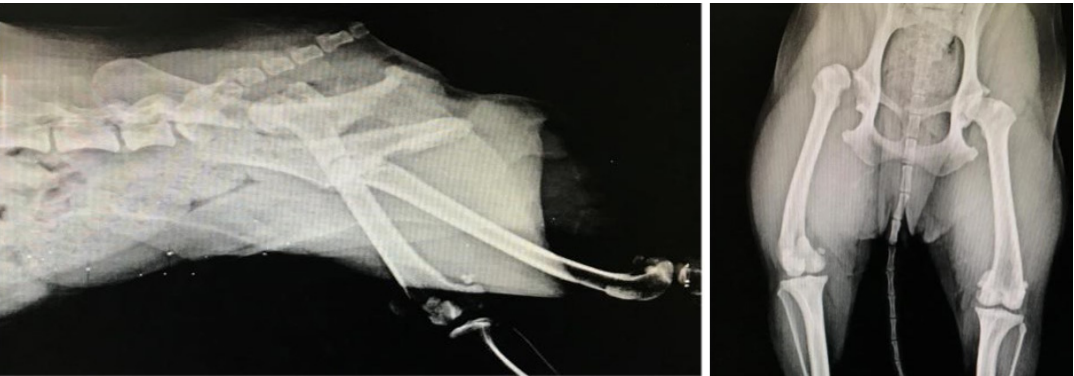


Figure 1. X-ray image showing right hip luxation

Figure 2. X-ray image showing both hip osteoarthritis

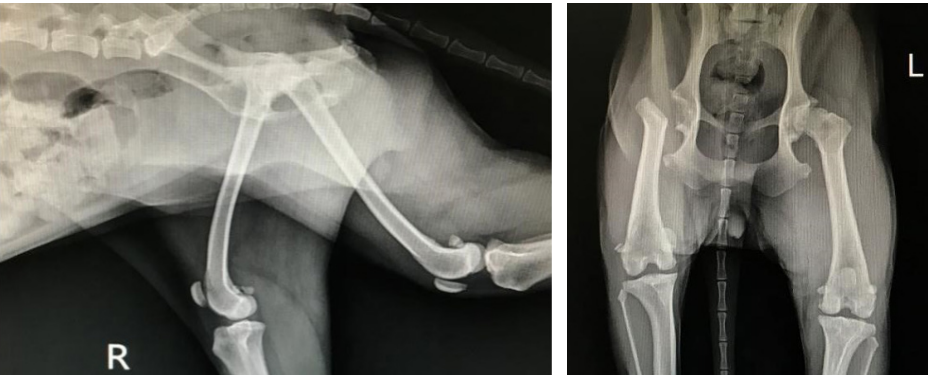


Figure 3. X-ray image showing lateral view of hip joints after right femoral head and neck excision

Figure 4. X-ray image showing ventrodorsal view of hip joints after right femoral head and neck excision

Treatment

The empirical treatment included carprofen (Rimadyl®) 2.5 mg/kg bid for 3 consecutive days to reduce pain and inflammation. Then the dog received femoral head and neck excision of the right femur (Figure 3 and 4) and carprofen (Rimadyl®) 2.5 mg/kg bid was continued for another 4 days after the operation.

To prevent infection of the surgical wound, cephalixin 25 mg/kg bid was given for 7 days after the surgery. The dog also received PCSO-524® (Antinol®) 1 capsule per day since the first day of hospital visit before the surgery and continued after the surgery to enhance the recovery of osteoarthritic joints and to reduce pain. **Rehabilitation therapy** was deployed after the surgery (Table 1).

Table 1. Medical and rehabilitation treatment schemes

Week	Medical treatment	Rehabilitation treatment
1	Carprofen (Rimadyl®) 2.5 mg/kg bid 4 days	Laser therapy class 4 (Figure 5) - Right hip - Energy level 5 J/cm2 - Surface area 30 cm2 - Time: 4 minutes per shot - Frequency: Twice a week - Duration: 3 consecutive weeks
	Cephalexin 25 mg/kg bid 7 days	
	PCSO-524® (Antinol®) 1 capsule per day	
2	PCSO-524® (Antinol®) 1 capsule per day	Exercise once a week - Balance board (Figure 6) - Cavaletti exercise (Figure 7) - Land treadmill walk
3	PCSO-524® (Antinol®) 1 capsule per day	
4	PCSO-524® (Antinol®) 1 capsule per day	
5	PCSO-524® (Antinol®) 1 capsule per day	Hydrotherapy (Figure 8) once a week - Underwater treadmill walk - Swimming
6	PCSO-524® (Antinol®) 1 capsule per day	
7	PCSO-524® (Antinol®) 1 capsule per day	
8	PCSO-524® (Antinol®) 1 capsule per day	
9	PCSO-524® (Antinol®) 1 capsule per day	
10	PCSO-524® (Antinol®) 1 capsule per day	
11	PCSO-524® (Antinol®) 1 capsule per day	
12	PCSO-524® (Antinol®) 1 capsule per day	



Figure 5. Laser class 4 therapy at the right hip



Figure 6. Balance board exercise



Figure 7. Cavaletti exercise



Figure 8. Hydrotherapy

Treatment outcome

The treatment follow-up was scheduled once a week to evaluate the treatment outcome. Subjective evaluation including lameness score (0-4) at stance, walk, and trot (Table 2) and pain score (1-5) were used (Table 3). The dog showed improvement of lameness score and pain score at the evaluation each week (Table 4), and completely restored the right leg function within 6 weeks. This was consistent with the owner’s report that the dog had improved walking and running posture.

Table 2. Lameness score description

Lameness Score	Description		
	Stance	Walk	Trot
0	Normal stance	No lameness/weight-bearing on all strides ob-served	No lameness/weight-bearing on all strides observed
1	Slightly abnormal stance (partial weight-bearing)	Mild subtle lameness with partial weight-bearing	Mild subtle lameness with partial weight-bearing
2	Moderately abnormal stance (toe-touch weight-bearing)	Obvious lameness with partial weight -bearing	Obvious lameness with partial weight -bearing
3	Severely abnormal stance (holds limb off the floor)	Obvious lameness with intermittent weight -bearing	Obvious lameness with intermittent weight -bearing
4	Unable to stand	Full non-weight-bearing lame	Full non-weight-bearing lame

Table 3. Pain score description

Score	Clinical findings
1	No pain indicated on palpation of affected joint
2	Mild pain indicated on affected joint e.g. Animal turns head in recognition
3	Moderate pain on palpation of affected joint e.g. Animal pulls limb away
4	Severe pain on palpation of affected joint e.g. animal vocalizes or become aggressive
5	Animal will not allow examiner to palpate joint due to pain

Table 4. Lameness and pain evaluation of the right hind leg at each week of the follow-up

Week	Lameness score (0-4)			Pain score (1-5)
	Stance	Walk	Trot	
Before treatment	4	4	4	4
Follow-up week 1	2	2	3	2
Follow-up week 2	1	1	2	2
Follow-up week 3	0	1	1	1
Follow-up week 4	0	0	1	1
Follow-up week 5	0	0	1	1
Follow-up week 6	0	0	0	1
Follow-up week 7	0	0	0	1
Follow-up week 8	0	0	0	1
Follow-up week 9	0	0	0	1
Follow-up week 10	0	0	0	1
Follow-up week 11	0	0	0	1
Follow-up week 12	0	0	0	1

Discussion

Femoral head and neck excision is widely accepted for surgical treatment of hip luxation, however, the leg function takes some time after surgery to recover due to **chronic pain and muscle atrophy**.

Rehabilitation therapy necessary for restoration of mobility used in this study included treatment with laser class 4 to reduce pain, exercise and hydrotherapy to enhance muscle and joint function, and use of neutraceutical treatment, PCSO-524®.

The right leg function of the dog was continuously resumed after the surgery and completely restored within 6 weeks. This study demonstrated that **the use of neutraceutical supplement for multimodal treatment** is an effective choice for restoration of musculoskeletal function.

Conclusion

The study demonstrated that **long-term use of PCSO-524®**, which contains high amount of **omega-3** and **omega-6**, is effective for treatment of inflammation and restoration of dog mobility without causing any adverse effects. It is safe for consumption since it is extracted from natural substance, New Zealand Green Lipped mussels, and can be used as a major medication or in conjunction with other choices of treatment.



Acknowledgement

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